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## *The Elaboration Likelihood Model: Current Status and Controversies*

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It has now been over 20 years since the notion of "two routes to persuasion" was introduced (see Petty, 1977; Petty & Cacioppo, 1981), and over a decade since the elaboration likelihood model (ELM) was translated into a series of formal postulates (Petty & Cacioppo, 1986a, 1986b). The model has garnered some praise (e.g., Ajzen, 1987; Pratkanis, 1989; Sears, 1988), and has guided a large number of basic and applied studies (see Petty & Wegener, 1998, for a recent review), but it has also been misunderstood and criticized on occasion (e.g., Stiff, 1986; Hamilton, Hunter, & Boster, 1993). The goals of this chapter are to provide a brief overview of the model; to discuss some of the major conceptual questions and confusions that have arisen; and to examine the current status of the ELM as a theory of persuasion in particular and of social judgment more generally.

When the idea of two routes to persuasion was first proposed (Petty, 1977), the literature on attitude change was in a state of disarray, to say the least. Seemingly simple variables such as the credibility of the message source or a person's affective state, which were predicted to have relatively straightforward effects on attitude change according to the persuasion theories of the time, instead

produced a mystifying diversity of findings. For instance, expert sources, though usually good for persuasion (e.g., Kelman & Hovland, 1953) were not invariably favorable (e.g., Sternthal, Dholakia, & Leavitt, 1978). Similarly, inducing negative affect, though often bad for attitude change (e.g., Zanna, Kiesler, & Pilkonis, 1970), was sometimes associated with more positive influence (e.g., Leventhal, 1970).

The extraordinary complexity of research findings caused some reviewers of the attitude change literature in the late 1970s, both in the United States and abroad, to be quite pessimistic. For example, Jaspers (1978, p. 295) noted that "the most disturbing aspect of these results is their inconsistency." Sherif (1977, p. 370) described the "reigning confusion in the area," and Kiesler and Munson (1975, p. 443) concluded that "attitude change is not the thriving field it once was." Fishbein and Ajzen (1981) characterized the literature as "an accumulation of largely contradictory and inconsistent findings with few (if any) generalizable principles of effective communication" (p. 340). They argued that "a rather serious reconsideration of basic assumptions and thoughtful theoretical reanalyses of problems confronting the

field" (Fishbein & Ajzen, 1972, p. 532) were needed. Against this backdrop, the two-routes-to-persuasion notion and the ELM were introduced in order to account for the complicated and perplexing results obtained in the accumulated literature, and to provide an integrative framework with which past research findings could be understood as well as new predictions generated.

## OVERVIEW OF THE ELM

In brief, the ELM was formulated as a theory about how the classic source (e.g., expertise), message (e.g., number of arguments), recipient (e.g., mood), and contextual (e.g., distraction) variables have an impact on attitudes toward various objects, issues, and people. More generally, though, the theory can be used to understand how any external or internal variable has an impact on some evaluative (e.g., good-bad) or nonevaluative (e.g., likely-unlikely) judgment. As articulated in more detail shortly, the theory outlines a finite number of ways in which variables can have their impact on judgments; it also specifies when variables take on these roles, as well as the consequences resulting from these different roles. That is, the ELM is a theory about the processes underlying changes in judgments of objects, the variables that induce these processes, and the strength of the judgments resulting from these processes. Because most of the work on the ELM has emphasized evaluative judgments, we focus on evaluations (i.e., attitudes) in this chapter, though similar points can be made for nonevaluative judgments.

The ELM is a dual-route but multiprocess theory (depicted schematically in Figure 3.1). The dual routes—"central" and "peripheral"—refer to attitude changes that are based on different degrees of elaborative information-processing activity. Central-route attitude changes are those that are based on relatively extensive and effortful information-processing activity, aimed at scrutinizing and uncovering the central merits of the issue or advocacy. Peripheral-route attitude changes are based on a variety of attitude change processes that typically require less cognitive effort. As explained further shortly, some low-effort attitude changes are based on processes

that differ primarily in *quantitative* ways from central-route processes, but other peripheral-route changes result from processes that are both less effortful and are *qualitatively* different (Petty, 1997). These low-effort mechanisms are lumped together under the peripheral-route label because of the similarity in the consequences they are postulated to induce (Petty, Wheeler, & Bizer, in press).<sup>1</sup>

Perhaps the most critical construct in the ELM is the elaboration continuum. Points along the elaboration continuum are determined by how motivated and able people are to assess and elaborate upon the central merits of a person, issue, or a position (i.e., the attitude object).<sup>2</sup> As discussed in regard to Postulate 1 shortly, when a person is making an evaluative judgment, the "default" goal is to determine how good or bad the object "really" is; but when a person is judging likelihood, for example, the goal is to determine how likely or unlikely the event "really" is. The more motivated and able people are to assess the central merits of the attitude object (i.e., to determine how good it really is), the more likely they are to effortfully scrutinize all available object-relevant information. This is because effortful scrutiny is usually perceived to be the best way to achieve this goal. Thus, at the high end of the elaboration continuum, people assess object-relevant information in relation to knowledge that they already possess, and arrive at a reasoned (though not necessarily unbiased) attitude that is well articulated and bolstered by supporting information (the "central route" to judgment). At the low end of the elaboration continuum, information scrutiny is reduced. Nevertheless, attitude change can still result from a low-effort scrutiny of the information available (e.g., examining less information than when elaboration is high or examining the same information less carefully); or attitude change can result from a number of less resource-demanding processes, such as classical conditioning (Staats & Staats, 1958), self-perception (Bem, 1972), or the use of heuristics (Chaiken, 1987). Attitudes that are changed with minimal object-relevant thought are postulated to be weaker than attitudes that are changed to the same extent as a result of high object-relevant thought.

The ELM hypothesis of an elaboration continuum comes from recognizing that it is

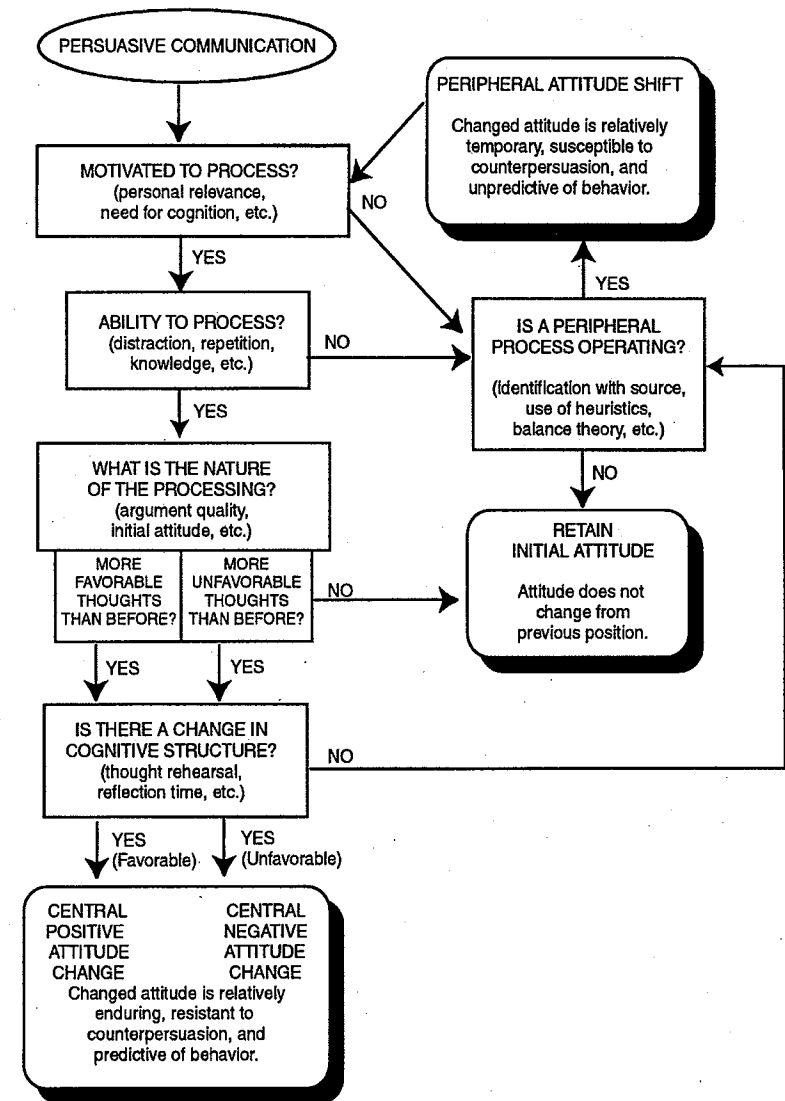


FIGURE 3.1. The elaboration likelihood model of persuasion.

neither adaptive nor possible for people to exert considerable mental effort in thinking about all of the messages and attitude objects to which they are exposed. In order to function in life, people must sometimes act as "cognitive misers" (Taylor, 1981), but at

other times it is more adaptive for them to be generous with their cognitive resources. In the remainder of this chapter, we reexamine the formal ELM postulates first presented by Petty and Cacioppo (1986a, 1986b), and address some issues, confusions, and misunder-

standings that have been raised since their introduction. We conclude with some discussions of similar dual-process and multiprocess theories that have been developed outside the persuasion domain.

#### POSTULATE 1: THE CORRECTNESS POSTULATE

*People are motivated to hold correct attitudes.*

The ELM assumes that at least at a conscious level, people want to hold opinions (and come to judgments) that are correct. That is, in the absence of other competing motives, the correctness motive is presumed to be the default goal. Of course, as Festinger (1954) noted, attitudes cannot be correct in any absolute sense. Rather, the correctness of an attitude is a subjective assessment and can be based on a wide variety of "evidence." Festinger emphasized the extent to which people look to the opinions of others as a means of judging the correctness of their own attitudes. This social comparison process is a relatively simple and easy way of judging correctness. As we will see shortly, the ELM holds open a number of other ways in which a person can achieve a feeling of subjective correctness. For example, people can ignore the opinions of others and effortfully seek out and evaluate all of the relevant information on their own. Or people can consider both the opinions of others and the implications of their personal scrutiny of the object's merits. Or different strategies can be used on different occasions. For example, people who do not enjoy thinking can simply accept what expert and trustworthy sources say, and can thus conserve their cognitive resources. However, if an expert source is untrustworthy, then people who prefer not to think might need to evaluate the message on their own in order to achieve the same feeling of correctness (Priester & Petty, 1995). Finally, the opinions of others might influence the extent or direction of the person's own scrutiny. For example, the greater the number of people who endorse an issue, the more an individual might choose to think about that issue (Burnstein & Vinokur, 1975; Burnstein, Vinokur, & Trope, 1973; Harkins & Petty, 1987). Whatever strategy is used, however,

the ELM assumes that the default goal is to come to a judgment that is subjectively correct.<sup>3</sup>

The assumption that the default motive is to be correct does not imply that people cannot be biased in their assessment of evidence, however (see discussion of Postulate 5). The first postulate of the ELM merely assumes that people are rarely explicitly motivated to be biased. Thus, in situations where people openly acknowledge and rely on a prejudice, they will often think that there is some merit or legitimacy to their view (e.g., a person might be openly biased against women police officers because he or she believes that men can do a better job). That is, people can believe that their bias helps them to be correct! As this implies, sometimes increasing the motive to be correct can actually enhance biased processing. For example, consider a person who is absolutely certain of the validity of a current attitude. In such a situation, the largest threat to correctness comes from the possibility that the person will succumb to influence. Thus, this person's goal will be to defend the attitude from attack, because defending the existing attitude may be the best way of maintaining a subjective sense of correctness. Of course, if a possible bias is made salient and people find this bias to be illegitimate, consistent with Postulate 1, people will often engage in some corrective action (Wegener & Petty, 1997). Additional discussion of bias is postponed until our discussion of Postulate 5.

#### POSTULATE 2: THE ELABORATION CONTINUUM POSTULATE

*Although people want to hold correct attitudes, the amount and nature of issue-relevant elaboration in which they are willing or able to engage to evaluate a message vary with individual and situational factors.*

Postulate 2 recognizes that even though people want to be correct, this does not mean that the amount of effort devoted to thinking will be constant across all people and situations. First, consider that the motive to be correct, like other psychological states, can vary with individual and situational factors.

That is, some people probably have a greater desire to be correct than others, and some situations elicit a greater motivation to be correct than others. For example, important issues could elicit a greater desire to be correct than unimportant issues. Therefore, if people think that the best way to form a correct opinion is to effortfully process all of the information provided, then subjectively important issues should elicit more diligent information-processing activity than subjectively unimportant ones (Petty & Cacioppo, 1979b, 1990). A desire to be correct can also motivate consideration of the likelihood that thinking will lead to a correct response. Specifically, although most people presumably believe that the best way to be correct is to effortfully examine all of the information, there may be some people for whom and some situations in which the opposite is the case. For example, if a person knows absolutely nothing about an issue, or has very low confidence in his or her analytic capabilities, the person may feel that the best way to be correct is to eschew effortful thinking and rely on knowledgeable others. For such a person, this tendency should be exacerbated when issue importance (and the need to be correct) is increased (cf. Sorrentino, Bobocel, Gitta, & Olson, 1988). On the other hand, if people who have low confidence in their processing abilities are made to feel that they are capable of effortful analysis, then processing motivation should generally be increased (Bohner, Rank, Reinhard, Einwiller, & Erb, 1998; Evans & Petty, 1998).

Although the desire to be correct and the perception of one's ability to be correct by engaging in effortful thinking are important determinants of the extent of information-processing activity, Postulate 2 explicitly recognizes that a consideration of "correctness" is not the only factor at work in determining the extent of thinking. For example, the hedonic (and other) consequences of thinking can also be important. Thus, putting people in a positive mood gets them to think more about pleasant messages—not because positive moods or pleasant messages increase the desire to be correct (or the need to have greater confidence in one's opinion; Chaiken, Liberman, & Eagly, 1989), but because thinking about a pleasant message is hedonically rewarding, and people in positive moods are

especially attentive to the hedonic consequences of their actions (Wegener & Petty, 1994; Wegener, Petty, & Smith, 1995; cf. Bless & Schwarz, Chapter 21, this volume). In a similar vein, some individuals generally take greater pleasure in thinking than others and thus these individuals (i.e., those high in *need for cognition*; Cacioppo & Petty, 1982) tend to engage in effortful thought because of its intrinsic enjoyment, without regard to the importance of the issue or the need to be correct (see Cacioppo, Petty, Feinstein, & Jarvis, 1996, for a review).

Importantly, Postulate 2 recognizes that motivational variables are not the only factors that influence the extent of thinking. Ability is important as well. Just as motivational variables can stem from the person or the situation, so too can ability. That is, some people are more able to think about issues because of their intelligence or knowledge, but some situations facilitate or impair thinking in most people (e.g., the presence of distraction hinders most people from processing a communication; Petty, Wells, & Brock, 1976). When both motivation and ability are high, people will presumably engage in considerable cognitive effort, and when both are low, effort will be low. If ability is high but motivation is low, people will not engage in much thinking until such time as motivation changes (e.g., following a message, people may learn of its personal relevance). Similarly, if motivation is high but ability is low, people will not process much until such time as they are able. If people continue to be interrupted before they are satisfied that they have achieved a correct opinion (or whatever their salient processing goal is), this can lead to recurrent thought about the object (see Petty, Jarvis, & Evans, 1996, for additional discussion).

Two aspects of Postulate 2 have been misunderstood. The first is that the elaboration likelihood is incorrectly thought to refer to two discrete points rather than a *continuum*. This confusion probably stems in part from the depiction of high- and low-elaboration *endpoints* along the continuum in schematic presentations of the ELM such as that in Figure 3.1, or perhaps from discussion of the two "routes" to change—although such references are meant to describe prototypical points along the continuum. There are a number of important features to

this continuum; the most obvious of these is the hypothesis that sometimes attitude change occurs as a result of considerable thinking about and elaboration of the information provided, and at other times attitude change is associated with minimal thinking about and elaboration of the information provided. That is, the elaboration continuum notion implies that the *type* of thought given to object-relevant information can be the same under high- and low-elaboration conditions, but that the *amount* of cognitive activity varies (a "quantitative effect"; see Petty, 1997).

As an example of this quantitative effect, consider a person who is exposed to a message containing eight strong arguments. A high-elaboration processor might think of three or four favorable implications of each of the arguments, whereas a low-elaboration processor might think of only one or two favorable implications (because he or she is not thinking as much). The effect of this is that the high-elaboration processor will probably have more favorable attitudes toward the issue than the low-elaboration processor, because he or she will have generated more favorable implications of the strong arguments presented. An alternative way to bring about this effect is if the low-elaboration processor thinks diligently, but about fewer arguments (e.g., if the person generates three or four favorable thoughts to the first few arguments, but doesn't think at all about the remaining arguments). This is also likely to leave this person with a less favorable attitude than that of the person who has thought carefully about all of the arguments.<sup>4</sup>

The second low-elaboration process—thinking about fewer arguments—can lead to some interesting effects. For example, what if a message contains four strong arguments followed by four weak ones? A high-elaboration processor who thinks about all of the information in a relatively objective manner is likely to have a moderate opinion about the issue, because the arguments are mixed (Friedrich, Fetherstonhaugh, Casey, & Gallagher, 1996; Petty & Cacioppo, 1984a). However, an individual who considers only the early arguments is likely to have a more favorable opinion, because only the strong arguments are given careful consideration. If the message has four weak arguments followed by four strong ones, then the low-elaboration

processor will have a less favorable opinion than the high-elaboration processor who considers all of the arguments objectively.<sup>5</sup> In addition to these quantitative effects, however, the ELM holds that low-elaboration attitude change can be produced by processes that are substantively different from the argument consideration processes just described (a "qualitative effect"; Petty, 1997). Qualitative effects are addressed in more detail later.

A second confusion about the elaboration continuum concerns the nature of the thinking rather than the amount. The term "elaboration" is used to suggest that people add something of their own to the specific information provided in the communication. That is, when elaborating, they go beyond mere verbatim encoding (or learning) of the information provided. As Postulate 2 indicates, the ELM emphasizes *issue-relevant* elaboration (i.e., elaboration of information relevant to the attitude object or advocacy). This issue-relevant (or object-relevant) elaboration is often provoked by message arguments, but can also be sparked if no message is provided, or can be stimulated by nonmessage factors even when a message is presented. As noted by Petty and Cacioppo (1984b), as people approach the high end of the elaboration continuum, they are more likely to "scrutinize *all* available information in the immediate persuasion context . . . in an attempt to evaluate the true merits of the arguments *and position* advocated" (p. 671; emphasis added). Thus, a high elaboration individual might consider factors such as whether the message arguments presented are really cogent and compelling, but might also attempt to evaluate the merits of the position advocated by considering the information value of the source of the message (i.e., "Is the source legitimate to consider and helpful in judging the true merits of the object?"), his or her own currently experienced internal feelings (i.e., "are my feelings legitimate to consider and helpful in judging the true merits of the object?"), and all other factors relevant to judging the merits of the position advocated. Although some reviewers have believed that the ELM identifies central variables or high-effort processing with the message, and peripheral variables or low-effort processing with the source or nonmessage factors (e.g., see Kruglanski & Thompson, in press;

Spiegel, Thompson, & Kruglanski, 1996), this is not the case. In the ELM, content (e.g., source or message variables) and process (e.g., effortful scrutiny, classical conditioning effects, use of heuristics, etc.) are orthogonal. That is, one can engage in effortful scrutiny for merit of source and message factors, and these features of the persuasion context can also be the source of heuristics and other peripheral processes. Although some ELM research has manipulated source versus message variables to *operationalize* high- versus low-elaboration attitude change (e.g., Petty, Cacioppo, & Goldman, 1981), other ELM research has explicitly manipulated only message factors to show their role as peripheral cues in low-elaboration attitude change (e.g., Petty & Cacioppo, 1984a), and some research has manipulated source factors and pointed to their role as arguments in high-elaboration attitude change (Petty & Cacioppo, 1984b).

Research guided by the ELM has shown that just as various message factors (e.g., the mere number of arguments used) can serve as simple cues and can affect judgments when the extent of elaboration is low, various source factors can be relevant to judging the central merits of an object when the extent of elaboration is high. For example, Petty and Cacioppo (1986a) noted that "for teenage smokers . . . the major reason why they smoke may relate to the image of the particular brand. . . . [Thus] . . . the presentation of [various] images might provide important product-relevant information" (p. 17). Similarly, high self-monitors are concerned with the image they project to others (Snyder, 1979), and thus these individuals are likely to think carefully about the image a message source conveys in high-elaboration situations.

There are a number of unexplored implications of the notion that at the extreme high end of the elaboration continuum, people scrutinize all information relevant to judging the position advocated. This means, for example, that people will subject source and message information to more scrutiny under high- than under low-elaboration conditions. Under low-elaboration conditions, people are looking for a simple, quick, and easy way to judge the merits of the position, rather than examining all of the information carefully. Thus, according to the ELM, under these conditions people might base their judgment on

the first arguments processed, or on the mere number of arguments presented, or on a cursory analysis of the source (e.g., whether the source seems attractive, likable, expert). However, when people are motivated and able to engage in greater scrutiny, their quick impressions can be modified. That is, later arguments can undermine the implications of early ones, or the large number of arguments may turn out to be specious, or a source who seemed expert on a first glance may turn out to be a fraud upon more careful analysis. Furthermore, as people think about the information more, they may decide that it is inappropriate to use some of the information that they were all too willing to use when they were not thinking very much. For example, when thinking carefully and motivated to be accurate, people might become aware that their mood could be biasing their judgment, and might actively attempt to correct for this influence (see Ottati & Isbell, 1996; Wegener & Petty, 1997). On the other hand, it is possible that with increased scrutiny, people might become even more convinced of the utility of some factor and give it more weight. For example, under high scrutiny people might become more convinced of the expertise, knowledge, and/or informational relevance of the message source, and thus might weight this information even more in their final judgment than when they are not thinking carefully (e.g., Kirmani & Shiv, 1998).

The point is that when a person's goal in scrutinizing all of the information is to determine the true merits of the proposal, the person will use whatever information seems useful in reaching that goal. Thus, if providing a message recipient with extensive information about the credibility of the source convinces the person more of the validity of the position when the source information is scrutinized, the impact of credibility can be even higher under high- than under low-elaboration conditions. Conversely, if providing extensive information about the attractiveness of the source (e.g., number of beauty pageants won, etc.) does not convince the person of the validity of the position when this information is scrutinized (e.g., if this information is viewed as irrelevant to the advocacy), the impact of the attractiveness manipulation can be lower under high- than under low-elaboration conditions. Treating the same information differ-

ently under different levels of elaboration is at the heart of the next ELM postulate.

### POSTULATE 3: THE MULTIPLE-ROLES POSTULATE

*Variables can affect the amount and direction of attitude change by (a) serving as persuasive arguments, (b) serving as peripheral cues, and/or (c) affecting the extent or direction of issue and argument elaboration.*

Postulate 3 is perhaps the most misunderstood of all of the ELM postulates. This postulate does a number of things, but we focus on two here. First, it makes a distinction between the processes by which variables have an impact on persuasion. Second, it suggests that any one variable can have an impact on attitude change by more than one mechanism. We discuss each of these notions in turn.

#### Central versus Peripheral Processes of Attitude Change

One of the important things that Postulate 3 is intended to do is to make a distinction between treating information as an "argument" or as a "cue." Postulate 2 introduced the elaboration continuum, and we have seen that a number of interesting effects can be predicted simply by considering the extent to which people process each of the items of information presented as arguments. That is, the items of information available in the persuasion situation (whether stemming from the source, the message, the context, or one's own mind or body) can be subjected to scrutiny and examined for relevance in determining the merit of the position advocated. As noted in discussing Postulate 2, this scrutiny of the information as arguments falls along a continuum and thus can be maximal, moderate, or minimal. In addition to this quantitative variation in the treatment of information as arguments, however, Postulate 3 notes that some information can be treated as a peripheral cue. The aim here is to make a *qualitative* distinction, to complement the *quantitative* variation encompassed by the elaboration continuum outlined in Postulate 2. If the only differences involved in persuasion were quan-

titative ones, then one might simply speak of one persuasion process that operated in varying degrees. In fact, some social psychologists have argued that there is just one persuasion process. Fishbein and Middlestadt (1995), for example, explicitly reject current multiprocess models such as the ELM and the heuristic-systematic model (HSM; Chaiken et al., 1989), arguing that all attitude change is "cognitive" and can be captured by changes in the composite created by combining the perceived desirability of an object's attributes and the perceived likelihood of the object's possessing those attributes. Similarly, Kruglanski's lay epistemic theory (LET; see Kruglanski, 1989; Kruglanski, Thompson, & Spiegel, Chapter 14, this volume) rejects the need for multiprocess frameworks, preferring to lump all proposed mechanisms of persuasion into one process of "hypothesis testing." Of course, if one process were sufficient to account for persuasion, then the LET and other one-process models would be more parsimonious than and thus superior to multiprocess models.

While acknowledging the importance of quantitative variations in the extent of elaboration in Postulate 2, the ELM holds that no single process or mechanism is sufficient to account for the complexity of judgment phenomena. Rather, the ELM holds that various peripheral mechanisms of attitude change, which do not involve much (if any) thought about the substantive merits of the information presented, occur when the elaboration likelihood is low. For example, when presented with a lengthy list of arguments, the low-elaboration processor might not just process the first few arguments and quit (quantitative effect), but might instead simply count the arguments and reason that "if there are 20 reasons to favor it, it must be worthwhile" (see Petty & Cacioppo, 1984a). Note that this process of attitude change, on some dimensions at least, is qualitatively different from the argument elaboration process: This mechanism does not involve consideration of the merits of *any* of the arguments, but instead involves reliance on a rule of thumb or heuristic that the person generates or retrieves from memory (see Chaiken, 1987, and Chen & Chaiken, Chapter 4, this volume, for more on heuristic processing). Other relatively low-effort mechanisms that are capable of produc-

ing attitude change without processing the substantive merits of the information presented include classical conditioning (Staats & Staats, 1958; Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992), identification with the source of the message (Kelman, 1958), misattribution of affect to the message (Petty & Cacioppo, 1983; Schwarz & Clore, 1983), and mere-exposure effects (Bornstein, 1989; Zajonc, 1968). When one of these peripheral processes has a substantial influence on attitudes, this typically indicates that either motivation or ability is rather low in that persuasion setting and that the resulting attitudes are likely to be rather weak. We discuss the consequences of different attitude change processes further in connection with Postulate 7.<sup>6</sup>

#### Distinguishing Qualitative from Quantitative Effects along the Elaboration Continuum

At the conceptual level, it is relatively easy (we think) to distinguish between qualitatively different argument (central) and cue (peripheral) processes of persuasion. At the empirical level, however, it might sometimes be difficult to discern whether any given low-elaboration effect differs from a high-elaboration effect, because of the qualitative or the quantitative mechanism specified by the ELM. For example, consider a study reported by Petty and Cacioppo (1984b) in which the attractiveness of the message source in an advertisement for a beauty product was manipulated. In this study, the attractiveness of the source had an impact under both high- and low-involvement conditions (designed to manipulate the elaboration likelihood), but the manipulation of the quality of the verbal arguments had an impact only under high-involvement conditions. Stated differently, only source attractiveness had an impact under low-involvement (low-elaboration) conditions, but both source attractiveness and argument quality had an impact under high-involvement (high-elaboration) conditions. A clear conclusion from this study, consistent with the ELM, is that low-involvement participants engaged in less effortful information processing activity than high-involvement individuals because they considered a smaller quantity of information than high-involvement participants. But is this explana-

tion, based on the ELM prediction of quantitative variation along the elaboration continuum, sufficient to account for the results? Or did the processing of low-involvement individuals differ from that of high-involvement individuals in its quality as well as its quantity? Petty and Cacioppo (1984b) argued that the high-involvement individuals considered all information—including source attractiveness—and determined that the attractiveness of a person using a beauty product was a relevant consideration in judging the merit of the product; thus source attractiveness, when processed as an argument, added to the impact of the other (verbal) arguments presented for the product. Petty and Cacioppo further argued that in the low-involvement conditions, however, source attractiveness had an impact because of its function as a peripheral cue.

To summarize, one account for the different effects under high- and low-involvement conditions is simply a quantitative one. That is, low-involvement individuals could have processed the source attractiveness information in the same way as high-involvement individuals (i.e., they could have judged its relevance for the merit of the product), but they did not process the other information because the verbal arguments were less salient, more difficult to process, were introduced later in the communication, and so forth. Thus, this interpretation of the study, consistent with the ELM, says that involvement induced differences in the extent of information-processing activity, with high-involvement individuals engaging in greater information processing than low-involvement individuals (i.e., they processed more information as arguments). However, the ELM allows for another interpretation as well. Specifically, the low-involvement participants might have processed the source information in a qualitatively different way than high-involvement participants. For example, the attractive source could have produced positive affect that generalized to the product, as specified by classical conditioning models of attitude change (Staats & Staats, 1958). Or the positive regard for the attractive source could have led people to evaluate the product by means of a retrieved heuristic (e.g., "I agree with people I like"; Chaiken, 1987). In this study it was not possible to determine

whether a quantitative or a qualitative difference along the elaboration continuum was responsible for the differences observed under conditions of high and low involvement. However, it is possible to design a study that could tease these apart. For example, one could vary the relevance of the product to source attractiveness.

Consider a study that varies the elaboration likelihood (via involvement, distraction, etc.), the quality of the verbal arguments in the message, and the relevance of source attractiveness for the attitude object. Thus, some people might receive an ad for a beauty product as in the Petty and Cacioppo (1984b) study (high relevance of attractiveness), but others would receive an ad for a roofing contractor (low relevance of attractiveness). Both the quantitative and qualitative interpretations would suggest that the manipulation of verbal argument quality would have a greater impact under high- than under low-elaboration conditions. However, the quantitative and qualitative interpretations make different predictions for the low-relevance (low-elaboration) conditions.

Both frameworks agree that under high-elaboration conditions, people would process the source attractiveness information as an argument, leading to rejection of attractiveness in the ad for the roofing contractor but acceptance of it for the beauty product. Because processing the argument value of the source would lead to rejection of the source for the roofing ad (i.e., little or no impact of the attractive source), the quantitative explanation suggests that the attractive source would also have no effect for the roofing contractor under low-elaboration conditions (for the same reason that it would have no effect under high-elaboration conditions). However, the qualitative explanation suggests that the attractive source could have an impact for both the beauty product and the roofing ads under low-elaboration conditions, because the information could presumably be having an impact on judgment by a different mechanism (e.g., classical conditioning, invocation of a heuristic, etc.) that would be applicable regardless of the relevance of attractiveness to the product.

As we have just noted, both the quantitative and the qualitative possibilities are consistent with the ELM, so perhaps the key question is whether the qualitative feature of

the ELM is *ever* needed to account for results. If all results can be accommodated by the quantitative aspect of the ELM, then there would be no need to postulate a separate category of peripheral attitude change mechanisms (classical conditioning, use of heuristics, etc.). In our view, the empirical evidence to date clearly suggests that quantitative variations in elaboration alone are insufficient to account for the obtained results.

For example, in one relevant study, Miniard, Bhatla, Lord, Dickson, and Unnava (1991) varied motivation to think about an advertisement, as well as whether the pictures featured in the advertisement were relevant to judging the merits of the featured product or not (e.g., a picture of a fluffy kitten could suggest "softness" for a facial tissue, but a picture of an equally positive sunset would be irrelevant for this product). Miniard et al. found that the relevance of a picture to a product did not matter under low-elaboration conditions. That is, as long as the picture was rated positively, equally favorable attitudes toward the product were induced. Under high-elaboration conditions, however, the relevance of the picture was consequential. Specifically, the high-relevance picture was associated with more liking of the product than was the equally positive low-relevance picture. This finding is consistent with the idea that the pictures were processed in a qualitatively different manner under high- and low-elaboration conditions (i.e., as arguments and as peripheral cues, respectively).

In another study, mentioned earlier, Petty and Cacioppo (1984a) varied involvement, the quality of verbal arguments, and the number of verbal arguments in a message. Under low-involvement conditions, people reported agreeing with the message more when it contained more arguments, regardless of whether the arguments were cogent or specious. In contrast, under high-involvement conditions, more arguments led to more persuasion when the arguments were compelling, but to less persuasion when the arguments were specious (i.e., argument quality was more important than the mere number of arguments). It is not clear how a framework allowing only quantitative variations in processing could account for this pattern of results. That is, counting arguments seems to be a qualitatively different mechanism for producing attitude change than evaluating arguments for merit.<sup>7</sup>

In sum, although a number of interesting predictions can be made from consideration of the amount of elaboration alone (quantitative variation), additional interesting and unique predictions can be made from consideration of qualitatively different peripheral-route processes. As just noted, these qualitative predictions have been supported in some research, suggesting that one-process models may be overly limited (for discussions of unimodal versus multimodal models of persuasion, see Haugtvedt, 1997; Priester & Fleming, 1997; Schwartz, 1997; Wegener & Claypool, in press).

### Multiple Roles for Variables along the Elaboration Continuum

A second important feature of Postulate 3 is that it introduces the notion of multiple roles for persuasion variables. That is, the ELM notes that a variable can influence attitudes in four ways: (1) by serving as an argument, (2) by serving as a cue, (3) by determining the extent of elaboration, and (4) by producing a bias in elaboration. Importantly, the postulate is meant to suggest that variables (such as source attractiveness) need not serve in only one of the roles specified. At the time the postulate was originally presented, no research had been conducted demonstrating that any one variable could serve in *all* of the postulated roles, though Petty and Cacioppo (1986a) reviewed some studies showing that any one variable could serve in at least two different roles in different situations, and provided speculation about when and how any one variable could serve in all of the roles (see pp. 204-215).

In essence, the multiple-roles notion is that any given variable can influence attitudes by different processes, and Petty and Cacioppo (1986a, 1986b) noted that variables can take on different roles at different points along the elaboration continuum. In brief, variables serve as cues (or work via peripheral mechanisms) at the low end of the elaboration continuum. Variables serve as arguments or bias information processing at the high end of the elaboration continuum. Variables are most likely to affect the amount of thinking when the elaboration likelihood is not constrained by other variables to be high or low (e.g., at about the middle of the continuum). The fact that variables can take on

different roles at different points along the elaboration continuum implies that the *impact* of any given variable that serves as a peripheral cue under low-elaboration conditions can be enhanced, can be reduced, can be reversed, or can remain the same as the elaboration likelihood is increased (Petty, 1994).

For example, consider whether a manipulation of "beautiful scenery" in an advertisement for a vacation location should increase or decrease in impact as the elaboration likelihood is increased. If a person is not thinking about the ad very much, then the beautiful scenery might have a positive impact simply because of its mere association with the target location, much as it might have a similar positive impact on evaluations of a new car that is located in the scenery. However, as the elaboration likelihood is increased and the scenery is processed for its merits with respect to the product, then the impact of the scenery on attitudes might be increased in the ad for the vacation location because of its perceived relevance and merit (or might have the same impact but for a different reason than under low elaboration), but might show decreased impact in the ad for the car because of its perceived irrelevance for this product when processed as an argument. The positive impact of beautiful scenery can also be reversed if the scenery makes the ad seem more interesting (and thus people think about the ad more) when the ad contains only weak arguments for the vacation location.

As noted previously, one misunderstanding of the ELM is the mistaken belief that the model holds that source (and other nonmessage) variables are peripheral but message variables are central. Because of this misunderstanding, some have interpreted the ELM to say that source factors must invariably decrease in impact as the elaboration likelihood is increased (e.g., Kruglanski & Thompson, in press; Spiegel et al., 1996). Yet, as we have explained, there are multiple ways in which source (and other nonmessage) variables can *increase* in impact as a person moves up the elaboration continuum. For example, as the source information is scrutinized more carefully along with all other information, confidence in the validity of the message position might be increased (i.e., when the source is processed as an argument, confidence in the correctness of the position espoused might be increased, decreased, or



show no change). Second, the source impact can increase because the source biases information-processing activity. Thus an expert source might bias processing of the verbal arguments presented (Chaiken & Maheswaran, 1994), or might lead to the self-generation of arguments consistent with the position the source is advocating (see Burnstein & Vinokur, 1975). Of course, if a potential cue (e.g., an attractive source) is scrutinized and found lacking (e.g., "Attractiveness is not a good reason to favor this" or "It is biasing to go along just because he or she is attractive"), then the presumably positive cue can actually reduce persuasion (e.g., if an overcorrection for the perceived bias occurs; Petty, Wegener, & White, 1998). If the cue is deemed relevant and informative when scrutinized, however, then it will add to the impact of the other information. Note that in the ELM, the additive impact under high-elaboration conditions is not a result of a low-effort heuristic adding to the impact of high-effort central/systematic processing (see Maheswaran & Chaiken, 1991), but is due to the fact that the cue/heuristic is effortfully scrutinized as a potential argument supporting the advocacy of the message.<sup>8</sup>

In general, misunderstanding of the multiple-roles postulate shows up whenever scholars assume that the ELM holds that variables can take on only *one* of the postulated roles. Thus, some critics of the model (e.g., Allen & Reynolds, 1993) have (inappropriately) asked for a list of what variables work via the "central route" and what variables work via the "peripheral route." In a similar vein, scholars who review the effects of certain variables have sometimes struggled to determine whether a variable is a "central" or a "peripheral" one, rather than recognizing the multiple roles for variables. For example, in reviewing the effects of group membership on persuasion, McGarty, Haslam, Hutchinson, and Turner (1994) stated that "in the elaboration likelihood model (ELM) of Petty and Cacioppo (1986[b]), group memberships are persuasive by the peripheral route" (p. 269). Although this is a possibility, the multiple-roles postulate for variables outlined by Petty and Cacioppo (1986b) applies to group membership as much as it does to other variables. That is, in some circumstances persuasive influence of group membership might be a pe-

ripheral-cue effect, but at other times group membership might serve as an argument, might bias processing, or might influence how much people scrutinize arguments (see Fleming & Petty, in press, for additional discussion of multiple roles for group membership in persuasion).

In addition, when some investigators find that some seemingly "peripheral" variables can affect the amount of information processing, this is seen as a surprising revelation rather than as a result consistent with the ELM. For example, when Soldat, Sinclair, and Mark (1997) found that the color of the paper on which a task was printed influenced the extent of information processing, they noted that "it appears to be the case that cues that are traditionally seen as peripheral (e.g., color . . . ) can affect whether people engage in elaboration" (p. 69). As noted previously, even early research guided by the ELM multiple-roles notion showed that a variety of seemingly peripheral variables, such as source expertise (e.g., Heesacker, Petty, & Cacioppo, 1983) and source attractiveness (e.g., Puckett, Petty, Cacioppo, & Fisher, 1983), could influence the extent of information processing (see Petty & Cacioppo, 1986a, for a review, see also DeBono & Harnish, 1988).

In general, whenever researchers postulate or document just one role for a variable, the ELM multiple-roles postulate suggests that this variable might operate by different mechanisms in different situations. For example, in a recent study (Ottati, Terkildsen, & Hubbard, 1997), a speaker's facial expressions were shown to influence the extent of processing of the speaker's message (i.e., happy facial expressions elicited less elaboration than neutral expressions). The ELM suggests that a speaker's facial expressions should be capable of influencing attitudes by other mechanisms as well (e.g., by serving as a peripheral cue if the elaboration likelihood is constrained to be low).

#### POSTULATE 4: THE OBJECTIVE-PROCESSING POSTULATE

*Variables affecting motivation and/or ability to process a message in a relatively objective manner can do so by either enhancing or reducing argument scrutiny.*

Postulate 4 has been relatively uncontroversial. It simply notes that some variables influence the extent of information scrutiny in a relatively objective manner by invoking various motivational factors (encompassing a person's intentions and goals) and ability factors (encompassing a person's capabilities and opportunities). Persuasion researchers have identified a number of ways to assess the extent to which persuasion is based on effortful consideration of information. Perhaps the most popular procedure has followed Petty et al. (1976) and has varied the quality of the arguments contained in a message, in order to gauge the extent of message processing by the size of the argument quality effects on attitudes. Greater argument quality effects suggest greater argument scrutiny. Although the purpose of argument quality manipulation in ELM studies is sometimes misunderstood (see O'Keefe, 1990), such manipulation is simply a methodological tool for examining the impact of some other variable on thinking (for further discussion, see Petty & Cacioppo, 1986b; Petty, Wegener, Priester, Fabrigar, & Cacioppo, 1993).

Other procedures for assessing the extent of mental effort include assessment of the number and profile of issue-relevant thoughts generated (Petty, Ostrom, & Brock, 1981). High-elaboration conditions are sometimes associated with more thoughts (e.g., Burnkrant & Howard, 1984), and even if the total number of thoughts does not vary, under high-elaboration conditions the thoughts better reflect the quality of the issue-relevant information presented (e.g., Harkins & Petty, 1981). For example, low elaborators might generate an average of two favorable and three unfavorable thoughts following a message, reflecting their initially unfavorable attitudes regardless of the quality of the arguments presented. However, high elaborators might generate three favorable and two unfavorable thoughts following the presentation of strong arguments, and one favorable and four unfavorable thoughts following the presentation of weak arguments. Note that in this example, the total number of thoughts does not vary across elaboration conditions, but the thoughts better reflect the fact that the individuals have considered the substantive message information presented. Also, correlations between message-relevant thoughts and

postmessage attitudes tend to be greater when argument scrutiny is high (e.g., Chaiken, 1980; Petty & Cacioppo, 1979b), and high message elaboration can produce longer reading or exposure times than more cursory analyses (e.g., Mackie & Worth, 1989; see Wegener, Downing, Krosnick, & Petty, 1995, for a discussion of measures of elaboration).

The notion in Postulate 4 that variables can influence persuasion by enhancing or reducing information processing is a key hypothesis in helping to explain how the same variable can both increase and decrease persuasion. For example, because distraction reduces information processing, it inhibits whatever thoughts a person normally would be thinking in the absence of distraction. Thus, if a person would normally be generating many unfavorable thoughts because a message is highly counterattitudinal or contains specious arguments, distraction will reduce these unfavorable thoughts and will thereby increase persuasion. On the other hand, if the person would normally be generating many favorable thoughts because the message takes a highly desirable position or contains compelling arguments, distraction will reduce these favorable thoughts, and persuasion will be reduced as well (Petty et al., 1976).

Following the distraction studies (Petty et al., 1976), numerous investigations have manipulated some variable of interest (such as source expertise), along with some other variable (usually the cogency of the message arguments) that normally makes the profile of thoughts generated very favorable or very unfavorable when people think about the message. If source expertise influences thinking in a relatively objective manner, then one of the two patterns of results presented in Figure 3.2 can be expected. The top panel depicts the case in which a high-expertise source has led to greater differentiation of strong from weak arguments, suggesting that a high-expertise source produces more message processing than a low-expertise source. The bottom panel depicts the opposite result: A low-expertise source produces more message processing than a high-expertise source. Note that whichever processing outcome is produced, such results move understanding of the variable beyond the first-generation persuasion conclusion (i.e., that the variable either

enhances or reduces persuasion) to the second-generation conclusion (i.e., that the variable can both enhance and reduce persuasion because of its effect on information processing; see Petty, 1997, for additional discussion of the generations of persuasion research).

In the first wave of research examining the impact of some variable on message processing, it was typically assumed that variables either enhance or reduce information

processing. Many such variables have been examined in this regard. For example, just as distraction was shown to reduce ability to process a message, repeating a message was shown to increase ability to process (Cacioppo & Petty, 1989). Also, just as some variables were shown to increase motivation to process (e.g., enhancing personal relevance; Petty & Cacioppo, 1979b, 1990), other variables were shown to decrease motivation to

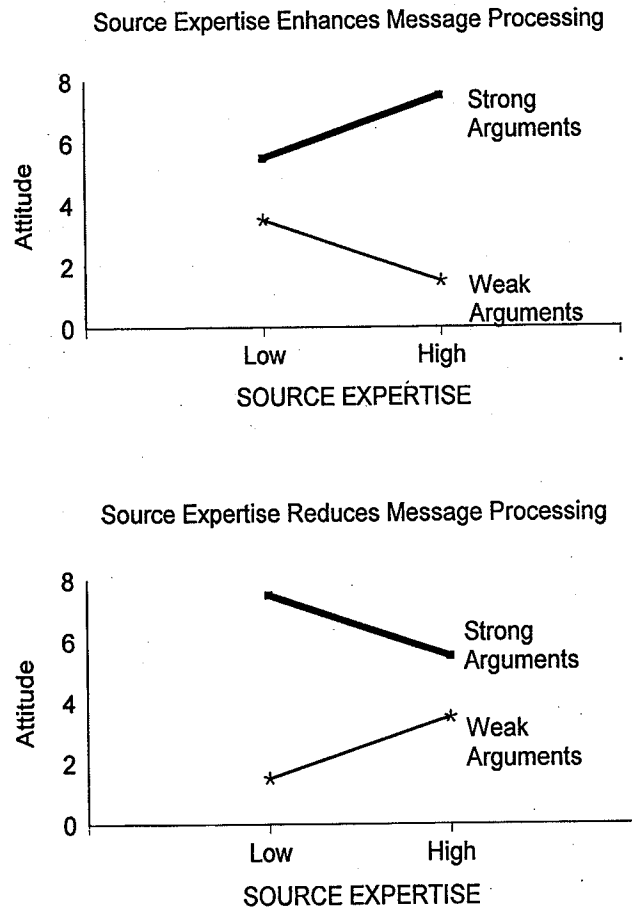


FIGURE 3.2. Two patterns of results that can be expected if source expertise influences thinking in a relatively objective manner: (Top) A high-expertise source leads to greater differentiation of strong from weak arguments. (Bottom) A low-expertise source leads to greater differentiation of strong from weak arguments.

process (e.g., making the person part of a group responsible for evaluating the message; Petty, Harkins, & Williams, 1980). Some variables (such as distraction and repetition) were part of the persuasion context, but other variables influencing processing stemmed from the message itself (e.g., overly complex messages tend to receive less processing than simple messages; Hafer, Reynolds, & Obertynski, 1996), or the source (e.g., knowledgeable sources who are untrustworthy induce more processing than knowledgeable sources who are trustworthy; Priester & Petty, 1995), or the recipient of the message (e.g., those high in need for cognition engage in greater message processing than those low in need for cognition; Cacioppo, Petty, & Morris, 1983). The number of variables that have been crossed with argument quality to examine the effect of the variables on information processing is now quite large; in addition to those just mentioned, these variables include mood (Worth & Mackie, 1987; Bless, Bohner, Schwarz, & Strack, 1990; see Bless & Schwarz, Chapter 21, this volume), recipient posture (Petty, Wells, Heesacker, Brock, & Cacioppo, 1983), deprivation of control (Pittman, 1993), expectation of discussion with another (Chaiken, 1980; Leippe & Elkin, 1987), number of message sources (e.g., Harkins & Petty, 1987; Moore & Reardon, 1987), ambivalence about the message topic (Maio, Bell, & Esses, 1996), speed of speech (Smith & Shaffer, 1991), physiological arousal (Sanbonmatsu & Kardes, 1988), time pressure (e.g., Ratneshwar & Chaiken, 1991), knowledge about the issue (Wood, Rhodes, & Biek, 1995), and others.

Thus, a number of studies have supported the second-generation conclusion that many variables can increase or decrease persuasion by increasing or decreasing information processing. More recently, however, a number of studies have addressed the third-generation possibility that the same variable can increase processing in some situations, but decrease it in others. The first such study examined the effect of rhetorical questions on persuasion and found that summarizing arguments as rhetorical questions (e.g., "Wouldn't increasing tuition lead to an improvement in the library?") rather than as statements (e.g., "Increasing tuition would lead to an improvement in the library") led to increased message

processing when the issue was of low personal relevance and people ordinarily would not be thinking about the message, but to reduced message processing when the issue was of high personal relevance and people ordinarily would be thinking about the message (Petty, Cacioppo, & Heesacker, 1981). The latter effect presumably occurred because people who were already engaged in thinking about the message were distracted from their natural chain of thoughts by the rhetorical questions.

Since the rhetorical-questions study, several variables have been shown both to increase and to decrease message processing in different situations. For example, endorsement of an advocacy by a majority of one's peers leads to more message processing than minority endorsement when the message topic is counterattitudinal, but majority endorsement leads to less message processing than minority endorsement when the message topic is proattitudinal (Baker & Petty, 1994). Framing the message arguments in a positive way (e.g., "If you stop smoking you will live longer") leads to more processing than negative framing (e.g., "If you don't stop smoking you will die sooner") when people expect negatively framed arguments, but positive framing leads to less processing than negative framing when people expect positively framed arguments (Smith & Petty, 1996). Happy mood leads to less message processing than sad mood when the message topic is expected to be unpleasant, but happy mood leads to more processing when the message topic is expected to be pleasant (Wegener, Petty, & Smith, 1995).

These patterns of data are very complex when one attempts to describe the impact of a variable on persuasion. For example, majority endorsement increases persuasion over minority endorsement when the topic is counterattitudinal and the arguments are strong (because in this case majority endorsement increases processing of the strong arguments over minority endorsement), or when the topic is proattitudinal and the arguments are weak (because in this case majority endorsement reduces processing of the weak arguments over minority endorsement). However, at the conceptual level the findings can be understood quite readily. For example, both the research on majority-minority endorsement



and the research on positive-negative framing can be understood by the simple principle that "surprise leads to more message processing" (e.g., it is surprising for people to find that a majority disagrees with them or a minority agrees). Similarly, the mood results can be understood through application of mood management motives (i.e., people in a positive mood process the pleasant message more because they are more sensitive to the hedonic consequences of their actions; Wegener & Petty, 1994). We suspect that a relatively small number of processing principles will ultimately integrate these third-generation studies.

#### POSTULATE 5: THE BIASED-PROCESSING POSTULATE

*Variables affecting message processing in a relatively biased manner can produce either a positive (favorable) or negative (unfavorable) motivational and/or ability bias to the issue-relevant thoughts attempted.*

Whereas Postulate 4 notes that some variables have an impact on thinking (elaboration) by influencing thinking in a relatively objective manner, Postulate 5 recognizes that thinking can also be biased. The variables just discussed, such as distraction or need for cognition, tend to influence information-processing activity in a relatively objective manner. That is, all else being equal, distraction tends to disrupt whatever thoughts a person is thinking (Petty et al., 1976). The distraction per se does not specifically target one type of thought (e.g., favorable or unfavorable) to impede. Similarly, individuals with high need for cognition are more motivated to think in general than are people low in need for cognition (Cacioppo et al., 1983). They are not more motivated to think certain kinds of thoughts over others. Some variables, however, are selective in their effects on thinking.

#### Motivational and Ability Factors in Bias

Just as motivational and ability factors contribute to relatively objective information processing, Postulate 5 notes that both moti-

vational and ability factors contribute to biased processing. Regarding motivation, the ELM holds that motivation is relatively objective when no *a priori* judgment is preferred and a person's implicit or explicit goal is to "seek the truth wherever it might lead" (Petty & Cacioppo, 1986b, p. 19). In contrast, a motivated bias can occur whenever people implicitly or explicitly prefer one judgment or conclusion over another. Petty and Cacioppo (1986b) noted that the distinction between objective and biased processing has much in common with an earlier cognitive distinction between "bottom-up" and "top-down" processing (cf. Bobrow & Norman, 1975). Whereas objective processing tends to be data-driven (i.e., drawing whatever conclusions the data imply), biased processing is directed in such a way as to favor an existing attitude schema or current goal. Biased processing also has much in common with a subsequent distinction made by Kruglanski (1990) between the need for "specific closure" and the need for "nonspecific closure." When a person is seeking nonspecific closure, any answer will do, and thus processing can be relatively objective; however, when a person is seeking specific closure, some answers are preferred over others, and thus processing is more likely to be biased.

In the ELM, a wide variety of motivations can determine which particular judgment is preferred in any given situation. For example, if the reactance motive (Brehm, 1966) is aroused, people will prefer to hold whatever judgment is forbidden or restricted and to resist whatever opinion is pressured. If balance motives (Heider, 1958) are operating, people will prefer to adopt the position of a liked source but to distance themselves from a disliked source. If impression management motives (Tedeschi, Schlenker, & Bonoma, 1971) are in ascendance, people will prefer to hold whatever position they think will be ingratiating and to avoid those that will make them look bad. If self-affirmation motives (Steele, 1988) are high, people will prefer the position that will make them feel best about themselves, and so forth. Importantly, many of these biasing motives can influence judgments by either the central or the peripheral route. That is, biasing motives can have their impact on judgments by effortful or noneffortful means. For example, invocation

of reactance can lead to simple rejection of the forbidden position without much thought (i.e., based on the reactance motive alone), or the reactance motive can lead to a more effortful rejection by motivating intense counterarguing of the position. Whether the motive produces a biased outcome by relatively effortful or noneffortful means will depend on other variables such as whether the person is motivated (e.g., high vs. low personal relevance) or able (e.g., high vs. low distraction) to think carefully about object-relevant information (Petty & Cacioppo, 1979, 1990). Finally, it is worth noting that if the overall elaboration likelihood is high, motivated biases will presumably lead to a biased assessment of *all* information in the persuasion environment. In such circumstances, people might "allow" certain peripheral cues consistent with their motivational goals to influence their judgments, whereas in the absence of these motives they will discount or correct for these cues (see "Bias Correction," below). If the overall elaboration likelihood is low, however, then motivated biases will either have a direct impact on judgment, or lead to a biased assessment of a more limited set of information (e.g., only the most salient peripheral cues).

The ELM holds that biased processing can occur even if no specific judgment is preferred (i.e., if motivational factors alone will promote relatively objective processing). This is because ability factors can also introduce a bias in the information-processing activity. For example, in some circumstances, knowledge stored in memory is simply imbalanced (and thus favors some conclusions over others). In other circumstances, variables in the persuasion setting can bias retrieval of information even if what is stored in memory is completely balanced and no motivational biases are operating (see Petty, Priester, & Wegener, 1994, for additional discussion). For example, a positive mood might increase access to positive material in memory (e.g., Bower, 1981; see Bless & Schwarz, Chapter 21, this volume). The result could be that favorable heuristics are more likely to be retrieved and used than unfavorable ones when the elaboration likelihood is low, and that favorable interpretations of arguments are generated and applied when the elaboration likelihood is high (Petty, Schumann, Richman, &

Strathman, 1993). In general, biases in processing a persuasive message are fostered when the message contains information that is ambiguous or mixed rather than clearly strong or weak (Chaiken & Maheswaran, 1994).

Bias can occur because of what people choose to process, how they choose to process it, and/or how they integrate the results of their information-processing efforts. Furthermore, these processes can be driven by motivational factors, by ability factors, or by both. Consider the well-known study by Lord, Ross, and Lepper (1979) in which people received information both favoring and opposing capital punishment information. Following the message, people reported their own side to be more compelling than the other side. This could have occurred for a number of reasons. Assume for the moment that in some objective sense, the arguments presented on both sides were equally compelling. Why would people have found their own side to be more persuasive? According to the ELM, there are a number of possibilities. First, people might have engaged in relatively little processing of either side, but simply demonstrated an "ownness bias" (Perloff & Brock, 1980) and reasoned that "my side is better" (i.e., using their initial attitude as a peripheral cue to validity; Petty, Cacioppo, & Haugtvedt, 1992). Second, the biased outcome could have come about as a result of various more effortful message-processing biases. For example, people could have engaged in greater thinking about their own side of the issue over the other side. Even if this processing was objective, this difference in amount of thought could have led them to find their own side to be more compelling. Alternatively, people could have engaged in biased processing of one or the other side—selectively arguing in favor of their own side and/or counterarguing the other side. Finally, even if people processed both sides objectively and to an equal extent, generating a balanced set of thoughts, the thoughts favoring their own side (and/or opposing the other side) might have been given greater weight in forming a final judgment than the thoughts favoring the other side (and/or opposing their own side; Anderson, 1981). It is important to note that these processes could have been mostly attributable either to ability or to motivational fac-

tors. For example, people might have selectively processed their own side mostly because it would be uncomfortable if their side did not "come out on top" (motivational factor), or mostly because they were more capable of thinking about the side that fit with their existing attitude schema (ability factor).

Consideration of both motivational and ability variables in bias can lead to some rather complex outcomes (see Biek, Wood, & Chaiken, 1996). For example, consider how a person's knowledge about an attitude issue can influence persuasion. Knowledge (i.e., information about the attitude object) can vary in both its nature and its amount, and can have an impact by both motivational and ability means. In most prior studies on knowledge, the amount of knowledge is measured (see Wood et al., 1995, for a review) rather than manipulated. Because people are likely to have knowledge that is consistent with or supportive of their attitudes, people who are categorized as especially high in knowledge are likely to be those who are also especially high in *attitude-congruent* knowledge. In general, the greater one's attitude-congruent knowledge, the more able one will be to defend one's position from attack. Thus, it might not be surprising that the typical effect reported in the literature between amount of knowledge and persuasion is that increased knowledge increases resistance to persuasion (e.g., Wood, Kallgren, & Priesler, 1985).

If a person has relatively objective or balanced knowledge about an issue, however, there is unlikely to be a bias due to ability factors (unless, of course, one type of knowledge is more easily activated than the other). Rather, as the extent of a person's balanced knowledge about the issue increases, the individual might be more able to see the merits (or faults) of either side of the issue to an equal degree, compared to a person with little knowledge about the issue. This might especially be the case if the message is rather complex and requires some prior knowledge to understand. If the message is relatively simple and does not require much in the way of background to understand, increasing one's balanced knowledge might not confer much ability benefit on processing (but might still affect motivation). Thus, in terms of ability factors, a biased knowledge base enables a person to see the merits of his or her own side

and to counterargue opposing sides, but relatively balanced knowledge is less likely to confer this ability bias. The nature of one's knowledge is considered an ability bias, because even if people are trying as hard as possible to be objective, it will be more difficult for them to do so the more they have a biased store of previous knowledge on the topic.

However, it is also important to recognize that increasing knowledge about a topic, whether that knowledge is balanced or not, can have various motivational consequences as well. For example, if the message topic is a relatively unimportant one, a person might use the perceived amount of knowledge on a topic as a cue to reject the message. That is, the person might reason that he or she is likely to have more expertise than the message source, and thus that there is no need to change. In addition, however, a person's knowledge can be used as an indication of whether or not to process the message. For example, the person might reason, "I'm uninformed, so I need to learn more," or "I know enough, so I don't need to process," or maybe even "I have some knowledge, so this must be worth thinking about." These postulated motivational effects are really effects of *perceived* knowledge rather than actual knowledge, since, for example, a person with objectively little knowledge might still perceive himself or herself as an expert! Of course, when the message topic is also important, thinking oneself to be more expert than the source can also lead to extensive counterarguing of what the source has to say on the topic.

### Bias Correction

The mere fact that some motivational or ability factor encourages biased processing does not mean that a biased outcome will inevitably result. One reason for this is that people sometimes attempt to correct for factors they believe might unduly influence (or might have unduly influenced) their evaluations (e.g., Strack, 1992; Petty & Wegener, 1993; Wilson & Brekke, 1994). According to the flexible-correction model (FCM; Wegener & Petty, 1995, 1997), corrections for bias can proceed in different directions, depending on recipients' theories of how the biasing event or stimulus (e.g., an attractive source) is likely to influence their views. The FCM posits that in

order for corrections to occur, people should (1) be motivated and able to identify potentially biasing factors, (2) possess or generate a naive theory about the magnitude and direction of the bias, and (3) be motivated and able to make the theory-based correction. In some cases, integrative processing of the information (e.g., Schul & Burnstein, 1985) can make it difficult for people to correct for the biasing effect of an individual piece of information that contributes to an overall evaluation. That is, even if motivated to correct, people might not have the ability to do so, or to do so accurately.

When people are motivated and able to correct, theory-based corrections can actually result in reversals of typical persuasion effects (e.g., if people believe that the persuasion factor has had a greater impact than it actually has). For example, in one study, when people were made aware of possible biases due to source likability, an overcorrection led a disliked source to be more persuasive than a liked source (Petty et al., 1998).

### POSTULATE 6: THE TRADEOFF POSTULATE

*As motivation and/or ability to process arguments is decreased, peripheral cues become relatively more important determinants of persuasion. Conversely, as argument scrutiny is increased, peripheral cues become relatively less important determinants of persuasion.*

Postulate 6 says that as one moves along the elaboration continuum, the impact of peripheral-cue processes on attitudes varies. That is, at low levels of information scrutiny, relatively low-elaboration judgment strategies (such as going with the early information or relying on heuristics) and low-elaboration judgment mechanisms and processes (such as identification with the source or classical conditioning) have a greater impact on attitudes than they do at high levels of scrutiny. In essence, Postulate 6 articulates a tradeoff between the impact of central and peripheral mechanisms on judgments along the elaboration likelihood continuum. That is, as the impact of central-route processes on judgments increases, the impact of peripheral-route

mechanisms on judgments decreases. One aspect of this postulate that has been misunderstood is that the postulated tradeoff is not in the *occurrence* of central and peripheral processes, but in the impact of these processes on attitudes and judgments. For example, the presence of one's friend might invoke the heuristic "I agree with people I like" (Chaiken, 1980) under both high- and low-elaboration conditions, because the heuristic is so well practiced that it is automatically accessed. Under high-elaboration conditions, however, when this heuristic enters consciousness it will be subjected to careful scrutiny, just as the other information in the persuasion context is subjected to scrutiny (Petty & Cacioppo, 1986a; Petty, 1994). That is, the retrieved heuristic, like all other available information in one's consciousness, will be evaluated as an argument. If the heuristic is found to lack merit as an argument for supporting the advocated view, then it will have little impact on one's overall judgment. On the other hand, if the heuristic is deemed cogent, then it will have an impact. This scrutiny of the heuristic for merit is less likely under low-elaboration conditions, where the mere invocation of the heuristic could be sufficient for persuasion.<sup>9</sup>

It is important to note that the ELM tradeoff hypothesis implies a number of things. First, at most points along the continuum, central and peripheral processes will co-occur and jointly influence judgments (Petty, Kasmer, Haugtvedt, & Cacioppo, 1987). Second, however, movement in either direction along the continuum will tend to enhance the *relative* impact of one or the other *process* (e.g., effortful scrutiny for merit vs. reliance on a heuristic) on judgments. It is important to note that changing the relative impact of one *process* over another on attitudes does not imply that the impact of any given *variable* (e.g., source expertise, mood) on judgments must increase or decrease as one moves along the continuum. This is because of the multiple-roles postulate discussed previously. Recall that the multiple-roles notion is that any given variable can influence attitudes by different processes at different points along the elaboration continuum (Petty & Cacioppo, 1986a). In fact, as noted previously, the ELM holds that the impact of variables serving as cues under low-elaboration conditions can be reduced, un-

changed, enhanced, or even reversed as the elaboration likelihood is increased! In sum, the tradeoff hypothesis basically means that a variable is less likely to have its impact on attitudes via a peripheral process as the elaboration likelihood is increased.<sup>10</sup>

### Reduced-Impact Effects

The earliest research on the ELM (and HSM) focused on the reduced impact of variables serving as cues as the elaboration likelihood was increased. For example, Petty, Cacioppo, and Goldman (1981) found that a manipulation of source expertise (i.e., whether the message on an educational issue came from a Princeton University professor or a local high school student) had a smaller impact on attitudes when the personal relevance of the communication was increased (and that a manipulation of argument quality had an increased impact). Similarly, as noted previously, Petty and Cacioppo (1984a) found that the mere number of arguments in a message had a smaller impact on attitudes as the personal relevance of the message was increased (but that argument quality had a larger effect).

Petty (1994) outlined a number of possible explanations for these reduced-impact effects. For example, features of a message that serve as peripheral cues when the elaboration likelihood is low (e.g., source attractiveness, message length) might initially be effective under high-elaboration conditions as well (leading to a tentatively favorable attitude), but might subsequently be drowned out or undermined by the more substantive arguments (see also Chaiken et al., 1989). Or these features might simply be less salient than other substantive features of the message when elaboration is high, and thus might be viewed as less extreme, weighted less, or ignored. Or people might process the feature intently (i.e., as an argument), but might find that it is not useful or relevant to evaluating the central merits of the issue. People might even explicitly attempt to discount or correct for the impact of these features if they are seen as biasing.

### Unchanged-, Enhanced-, and Reversed-Impact Effects

As just noted, according to the ELM, variables such as source attractiveness can have a

favorable impact on attitudes for different reasons along the elaboration continuum. For example, attractiveness can influence attitudes by some peripheral mechanism under low-elaboration conditions (e.g., if people are distracted), but can serve to influence the amount of thinking if the elaboration likelihood is a bit higher (e.g., if people are unsure whether or not cognitive effort is merited). Under even higher-elaboration conditions, attractiveness can serve as an argument if it provides information central to the merits of the attitude object, can bias the processing of whatever issue-relevant information is presented, or both. Furthermore, as noted previously, the biased processing can result from either motivational or ability factors. For example, an attractive source, like a positive mood, might make it more likely that positive associations and ideas will come to mind. Or, to the extent that self-affirmation motives or impression management motives are present in the situation, people might wish to agree with an attractive source for purposes of enhancing esteem in their own eyes or the eyes of others. The key point here is that depending on the *outcome* of these different processes, a variable that serves as a peripheral cue under low-elaboration conditions can lose the impact it had under low-elaboration conditions, can have an unchanged impact, can have an enhanced impact, or can even have a reversed impact on attitudes as the elaboration likelihood is increased.

For example, consider a study by Petty, Wegener, and White (1997, raw data; cited in Petty et al., 1998) in which a manipulation of liking for a source had an increased impact as the elaboration likelihood increased. In this study, students at Ohio State University were given a message from a person who either praised them in comparison to the students at the University of Michigan or derogated them. Part of the study was conducted prior to and part was conducted shortly after the University of Michigan football team defeated Ohio State for the second year in a row—once again ruining what would have been a perfect season and a chance at a national championship. For data collected prior to the game, the typical source effect emerged (with the likable source being more persuasive than the dislikable source to a greater extent under low- than under high-processing conditions; Chaiken, 1980; Petty,

Cacioppo, & Schumann, 1983). Shortly after the second-season ending loss to Michigan, however, the reverse was obtained. Following the loss, students reported that they didn't care about being highly biased against Michigan supporters. Thus, one would expect that the disliked source would lead to counterarguing when the topic was important. If the counterarguing of the disliked source was especially intense, it could lead to the observed result that the source manipulation had a greater impact in the high- than in the low-elaboration conditions. That is, the negative impact of counterarguing of the disliked source on attitudes could be greater than the negative impact of the disliked source's serving as a cue.

### POSTULATE 7: THE ATTITUDE STRENGTH POSTULATE

*Attitude changes that result mostly from processing issue-relevant arguments (central route) will show greater temporal persistence, greater prediction of behavior, and greater resistance to counterpersuasion than attitude changes that result mostly from peripheral cues.*

Postulate 7 suggests that basing one's attitude on considerable issue-relevant thinking (high elaboration) leads to stronger attitudes than basing one's attitude on little issue-relevant thinking (low elaboration), such as occurs when attitudes change by the peripheral route. As Petty and Cacioppo (1986b) explained, this postulate is based on the notion that high-effort, central-route processes generally require greater cognitive effort than peripheral-route processes, and that issue-relevant cognitive effort is related to the various indicators of attitude strength (e.g., resistance to counterpersuasion). Thus, carefully processing three message arguments will lead to stronger attitudes than carefully processing just one argument (quantitative effect), and carefully processing just one argument will lead to stronger attitudes than less effortfully basing one's attitude on one salient heuristic retrieved from memory, or on one inference (e.g., self-perception) generated on-line (qualitative effect). Because the latter prediction assumes that processing one argument requires greater object-relevant cognitive effort than

using one heuristic or inference, this comparison involves both a qualitative and a quantitative difference.

Several features of Postulate 7 have been misunderstood. First, it is important to consider that the postulate applies to a comparison between attitudes changed to the same degree by high and low amounts of elaboration. Thus, it would not be appropriate to compare, for example, the persistence of a very small change produced by high elaboration with a very large change produced by low elaboration. At a subsequent point in time, the absolute amount of change could well be larger for the low-elaboration change than for the high-elaboration change, given the very different starting points.

Second, in generating predictions from the postulate, it is important to understand why high amounts of elaboration are thought to produce the postulated strength consequences. That is, Petty and Cacioppo (1986b) noted that several mediating mechanisms are likely to be responsible for the effects of elaboration on attitude strength. They noted, for example, that high amounts of thinking about an object can render the attitude more accessible than low amounts of thinking, and that increased accessibility will make it more likely that the same attitude will be reported at two points in time and be available to guide behavior. Also, increased object-relevant thinking will make it more likely that the object-relevant information linked to the attitude will be more salient and thus can be used to defend one's attitude at a later point in time. Similarly, thinking might enhance confidence in one's attitude, making it more likely that one will be willing to act on the attitude (see also Petty, Haugvedt, & Smith, 1995). It is also possible that elaboration will enhance the consistency of the attitude with one's underlying beliefs, making it easier to resist countercommunications (see Chaiken, Pomerantz, & Giner-Sorolla, 1995). In any case, it is important to consider that object-relevant elaboration should produce strength consequences only to the extent that it is associated with the postulated mediating mechanisms. To the extent that elaboration does not result in the presumed mediating processes, it should not be associated with the strength consequences. Thus, for example, if increased thinking results in greater uncertainty about one's atti-

tude rather than in greater confidence, thinking should not necessarily result in greater strength than not thinking.

Furthermore, consideration of the presumed mediating mechanisms suggests that low-effort processes can also produce one or more of the strength consequences. Petty and Cacioppo (1986a) noted, for example, that increased repetition of one or more peripheral cues (e.g., Johnson & Watkins, 1971; Weber, 1972) can enhance the accessibility of the attitude and the memorability of the cue(s), resulting in relatively persistent attitudes. In fact, Zanna, Fazio, and Ross (1994) reported that merely having people rehearse their attitudes (presumably enhancing accessibility without encouraging any additional thinking) was sufficient to increase attitude persistence. Similarly, increasing the memorability or accessibility of a cue, by increasing its relevance to the attitude object, can also enhance persistence (Sengupta, Goodstein, & Boninger, 1997).

Another area of confusion is whether the various postulated strength consequences invariably co-occur, given that each results from elaboration. The ELM holds that the strength consequences can be independent. For example, Petty and Cacioppo (1986a) noted that "the resistance of an attitude to attack is conceptually distinct from the temporal persistence of the attitudes. Thus, some attitudes may be highly persistent, but only if they are not challenged. Likewise, it is possible for some attitudes to be very resistant to change, but only in the short term" (p. 190; see also McGuire, 1964). As one instance of independence, Petty and Cacioppo noted that repeatedly pairing peripheral cues with an attitude object can produce an accessible attitude that is relatively persistent. However, individuals with these peripherally based persistent attitudes are still likely to be susceptible to counterpersuasion, because they will presumably have difficulty mounting a defense of their attitudes if they are attacked with strong arguments.

In an empirical demonstration of the independence of attitude persistence and resistance, Haugtvedt, Schumann, Schneier, and Warren (1994) presented one group of participants with an advertising campaign for a consumer product in which the substantive arguments for the campaign were varied across

multiple exposures of the ads. Another group of participants was presented with a campaign in which the ads were varied cosmetically (e.g., different endorser cues in each ad), but the ads did not vary in the substantive arguments they presented. That is, the substantive variation strategy involved keeping the peripheral cues constant across exposures, but presenting different substantive information in each ad. The cosmetic-variation strategy involved keeping the substantive information the same across ad exposures, but varying the positive cues contained in the advertisements. Substantive variation strategies would be expected to encourage attitude formation by high-effort evaluation of the substantive arguments, but cosmetic variations would encourage attitude formation by low-effort processes, such as reliance on source heuristics (see Schumann, Petty, & Clemons, 1990).

Previous research comparing high- and low-effort attitude changes has typically involved a single exposure to a message containing multiple pieces of substantive information (arguments) but just one salient cue. Haugtvedt et al. (1994) noted that such research might have provided central-route participants with mnemonic advantages (e.g., multiple retrieval cues) over peripheral-route participants. However, if recipients were presented with multiple peripheral cues (cosmetic-variation strategy), or if a single cue was repeated multiple times, attitude persistence might be greater than that obtained in the typical low-effort condition, in which there was just one exposure to an ad containing a peripheral cue. Consistent with this hypothesis, Haugtvedt et al. (1994) found that people receiving three exposures to the substantively varied ads, to the cosmetically varied ads, or to a single ad showed greater (and equivalent) persistence in attitude change over a 1-week period, compared to people who received just one exposure. That is, by the persistence criterion, each of the repetition conditions produced equivalently more favorable attitudes than the single-exposure control 1 week after message presentation.

What about resistance? To assess this, after completing the delayed attitude measure, recipients were presented with a message that weakly attacked the product presented in the critical advertisements. On the attitude mea-

sure taken after the attacking message, people who had received the substantively varied ads showed greater resistance than people in any of the other groups. Thus, even though the repetition strategies were all more effective in enhancing persistence over 1 week than the single-exposure control condition was, the different repetition strategies were not all more effective in inducing resistance. Specifically, the attitudes based on exposure to substantively varied ads were more resistant in the face of attack than were the attitudes resulting from the other repetition strategy. That is, repetition and variation of peripheral cues were useful for increasing persistence, but were ineffective in increasing resistance. This can be understood by consideration of the presumed mediating mechanisms outlined above. That is, for example, both substantively and cosmetically varied ads could have increased the accessibility or memorability of the attitude to an equivalent extent, but only effortful processing of the substantive ads led people to have sufficient information to be able to defend their attitudes when attacked.

In sum, the key to Postulate 7 is understanding the impact of elaboration on the mechanisms mediating the strength consequences. Thus, if a message recipient elaborates a source factor and thinks about its relevance to validity, this should enhance strength over use of the same source factor as a cue (e.g., acceptance as a result of a heuristic) if the former process results in an attitude that is more accessible, associated with greater confidence, and so forth.

What happens when a strong (e.g., relatively persistent and accessible) attitude is changed as a result of the provision of new information? Is the old attitude simply replaced with the new one? This is a question with numerous conceptual and practical implications. For example, in the field of health education, people's initially strong attitudes in favor of smoking or high-fat foods can be changed by new information to be less favorable toward these objects. Yet, a common anecdotal occurrence is that when confronted with the attitude object (cigarettes, ice cream), the "old," highly favorable attitude can come to mind prior to the "new," less favorable one and guide behavior. Petty, Baker, and Gleicher (1991) suggested that this phenomenon should be especially likely when people are

under some cognitive load and are therefore unable to reflect upon their new attitude and/or to discount their old one (see also Petty, Gleicher, & Jarvis, 1993). Importantly, our discussion of Postulate 7 above implies that it isn't only old attitudes based on the central route that might continue to have some influence even after they are ostensibly changed. Consider an initial attitude based on classical conditioning—a peripheral attitude change mechanism that doesn't rely on effortful, issue-relevant thinking. However, this procedure pairs the attitude object with positive (or negative) affective cues over many trials. Because of this, an "old" conditioned attitude is likely to remain highly accessible and might continue to influence behavior even if the person supposedly adopts a "new" attitude—especially if the newly changed attitude is not as accessible as the old one, and the behavioral opportunity is one that does not allow time for contemplation (see Jarvis, Tormala, & Petty, 1998; Petty & Jarvis, 1998). This phenomenon suggests the possibility that people can simultaneously possess two (or more) evaluative predispositions (attitudes) toward a given attitude object (perhaps residing in separate memory systems; e.g., McClelland, McNaughton, & O'Reilly, 1995; see Smith & DeCoster, Chapter 16, this volume). Which attitude is activated and guiding can depend on the contextual conditions, such as whether some minimal time for reflection and discounting of the prior opinion is provided or not (see also Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Gilbert, 1991; Wilson & Schooler, 1998). The ELM strength postulate has been examined largely under conditions that allow at least some minimal time for deliberation. As just suggested, the consequences of attitudes examined under cognitive load or time pressure (or on implicit measures) might vary markedly from those observed when some reflection is permitted.

## THE ELM AND SOCIAL JUDGMENT

Thus far in this chapter, we have reviewed the formal postulates of the ELM, and addressed some areas of confusion that have appeared in the literature. Because most of the work on the ELM has been conducted in a persuasion context, our review and examples have fo-

cused on this context as well. In this section of the chapter, we briefly compare the ELM to other multiprocess models that have been developed outside of the persuasion context (for comparisons of the ELM with the HSM, see Chaiken, Wood, & Eagly, 1996; Eagly & Chaiken, 1993; Petty, 1994; Petty & Wegener, 1998). As noted in introducing the ELM, the basic tenets of the model can be used to understand both evaluative and nonevaluative judgments in a variety of domains (see also Petty et al., 1994), and in some cases basic elements of the ELM approach have been incorporated into these nonpersuasion models. In some cases, we believe that a more direct application of the ELM principles might provide a more complete framework for understanding the phenomena of interest.

### Person Perception

One of the most influential models of person perception is Fiske's (Fiske & Neuberg, 1990; Fiske & Pavelchak, 1986; see Fiske, Lin, & Neuberg, Chapter 11, this volume) continuum model of impression formation (for another prominent model in this area that shares some features with the continuum model, see Brewer, 1988, and Brewer & Harasty, Chapter 12, this volume). The continuum model distinguishes between category-based impressions and impressions based on individuating information. In brief, this model holds that when one encounters a new person, an attempt is made to fit the person into some preexisting category for which one already possesses an evaluation (e.g., the person is a "schizophrenic" or an "athlete"). Category-based evaluation is assumed to be a relatively efficient and effortless way to engage in evaluation. On the other hand, if categorization fails, one is "forced" to engage in an attribute-by-attribute assessment of the new person in order to form an evaluation. This "piecemeal" processing is less efficient and requires greater cognitive effort. Thus, this model shares with the ELM the basic assumption that sometimes evaluation is relatively thoughtful and effortful, but sometimes it is not. Fiske's model also highlights a particular low-effort evaluation process—reliance on a preexisting category. This mechanism seems most similar to Chaiken's (1980) em-

phasis on preexisting evaluative heuristics that are retrieved from memory. In any case, the ELM therefore predicts that impressions formed of new individuals on the basis of previously stored categories will be less strong (on some dimensions at least) than impressions formed by an effortful analysis of the traits and behaviors that the new person displays.

One potentially important difference between the Fiske model and the ELM is that the Fiske model implies a two-step process. That is, the high-effort evaluation is only postulated to occur to the extent that category processing fails. In the ELM, this two-step process provides a reasonable account of what happens in some circumstances (e.g., individuals low in need for cognition might rely on source trustworthiness cues if these are present, but if not, they might be "forced" to process the message; Priester & Petty, 1995). On the other hand, the ELM holds that there are a variety of situations in which people are highly motivated to think, and thus are not "forced" to think by a failure of peripheral cues to fit the target. In such situations, the ELM holds that people will engage in what Fiske has called "piecemeal" processing, and any category accessed will be evaluated along with all of the other person-relevant information, or the category might bias processing of the other information. Of course, the ELM also incorporates a variety of additional low-effort means of evaluating a person (beyond a stored assessment of the person's "category").

### Attitude-Behavior Consistency

Fazio (1990) has proposed a two-route model of behavioral choice (the "motivation and opportunity as determinants" [MODE] model; see Fazio & Towles-Schwen, Chapter 5, this volume). That is, sometimes people's behavior is thought to be determined largely by the accessibility of their existing attitudes, but at other times behavior is thought to be determined largely by people's effortful scrutiny of all of the available information in the behavioral context. Although the latter, more reasoned process has much in common with the high-effort, central-route process of attitude formation, the accessibility process does not necessarily map well onto the peripheral route. This is because the ELM holds that an

accessible attitude (like other variables) can influence behavioral judgments (like other judgments) in both effortful and noneffortful ways. Thus, a person's highly accessible attitude might come to mind and guide behavior rather automatically without much thought (e.g., "I like you, so I'll give you money"); or an accessible attitude might increase scrutiny of the information available in the behavioral situation in a rather objective way (see Fabrigar, Priester, Petty, & Wegener, 1998); or the attitude might bias processing of the information available (as emphasized by Fazio, 1995; e.g., liking the person makes the cause seem more worthy, leading to a greater monetary donation).

### Affect and Judgment

Forgas (1992, 1995) has recently proposed a multiroute model of the impact of affect on judgment (the affect infusion model, or AIM). In the AIM, several information-processing modes are described. Two of the modes address when affect has an impact on judgment, and two address when affect does not have an impact. Specifically, Forgas notes that affect can have an impact on judgment in two ways. In what Forgas calls "heuristic processing," affect influences judgment because people "use their affect as a short cut to infer their evaluative reactions to the target." In what he calls "substantive processing," affect influences judgment "through its selective influence on attention, encoding, retrieval, and associative processes" (Forgas, 1995, p. 40). In essence, these two processing modes map nicely onto the ELM notion that affect can influence judgment under low-elaboration conditions by serving as a peripheral cue, and under high-elaboration conditions by biasing thinking (see Petty, Schumann, et al., 1993, for evidence). Forgas further notes that affect will not have an impact on judgment if a person has a strong prior attitude that is retrieved directly ("direct access"). This mode points to one prior cue (i.e., a person's own attitude) that can be more salient than the cue effect produced by mood. The ELM argues that under low-elaboration conditions, a variety of cues might compete with mood—not just one's prior attitude. Thus, a salient disliked message source might be used as a cue under low-elaboration conditions, rather

than one's mood. That is, in the ELM, one's prior attitude is not the only cue that can override the impact of mood as a cue or can be used instead of mood. Finally, Forgas notes that affect will not have an impact on judgment under high-elaboration conditions if some strong motivational bias is at work ("motivated processing"). Stated in ELM terms, processing can be biased by a number of motivational factors when the elaboration likelihood is high, and some of these can undermine the impact of mood. For example, if a person is placed in a positive mood, but reactance is induced by the speaker, the desire to reject the message might overwhelm any favorable impact that normally would be produced by the positive mood. In sum, Forgas's four strategies map well onto a 2 (high elaboration, low elaboration)  $\times$  2 (no other bias present, other bias present) matrix, where under low elaboration the other bias is supplied by nonmood variables that can serve as cues (e.g., source likability), and under high elaboration the other bias is supplied by other motivational (e.g., reactance) or ability (e.g., prior knowledge) variables that compete with the mood bias.

There are also a number of crucial differences between the ELM and the AIM. For example, Forgas (1992, 1995) posits that stored judgments of the target are only used when the target (or judgment) is unimportant to the judge, whereas a person's stored attitude or judgment can serve in multiple roles within the ELM (see discussion of the MODE model, above). The models also diverge in their treatment of effects of mood. For example, in the AIM, both heuristic use of mood and effects of mood on information scrutiny occur only if the judgment is important (if the judgment is unimportant, direct access of a prior judgment is used). Within the ELM, heuristic and other "direct" influences of mood (e.g., classical conditioning) are more likely under low- rather than high-elaboration conditions (i.e., low rather than high importance of the attitude object or judgment), and effects of mood on amount of information scrutiny are most likely when elaboration likelihood is not constrained to be either high or low. Whereas the AIM (Forgas, 1992, 1995) hypothesizes decreased processing in happy moods, research guided by the ELM has shown that happy moods can either increase or decrease pro-



cessing of judgment-relevant information (see Wegener, Petty, & Smith, 1995). Finally, in addition to Forgas's heuristic-processing mode (based on a "How do I feel about it?" heuristic; Schwarz, 1990) and substantive-processing mode, the ELM postulates that affect can serve as an argument relevant to the central merits of a judgment target. Although the AIM might lump such an effect under the heuristic mode, we believe that there would be different consequences of using affect in these different ways.

### Survey Responding

Krosnick (1991) has presented a conceptual analysis of people's responses to survey questions. Two strategies are distinguished: "satisficing" and "optimizing." When satisficing, people do not engage in effortful thought about the survey question, and thus give answers that are based on salient cues in the environment or on more simplistic strategies (e.g., selecting the first plausible answer, or always saying "yes"). When optimizing, people engage in the effortful scrutiny of the questions and think carefully before answering. Thus, Krosnick notes that optimizing is more likely when people are both motivated and able to think about the survey questions, but that satisficing is more likely when either motivation or ability are low. Thus, consistent with the ELM, Krosnick postulates thoughtful and nonthoughtful routes to survey responding, which are moderated by motivational and ability factors. One important difference between the ELM analysis of survey responding and Krosnick's satisficing-optimizing analysis, however, is that Krosnick assumes that optimizing (i.e., high-effort processes) results in less biased judgments than satisficing (low-effort processes). In contrast, according to the ELM, bias can result from either low- or high-effort processes. For example, recall how mood can bias judgment by high-effort and low-effort processes (Petty, Schumann, et al., 1993). Thus, in the ELM, high effort is no guarantee that survey responses will be any more accurate than low-effort responses. In fact, in some cases, giving quick, highly accessible responses can result in greater accuracy than highly thoughtful but biased responses (cf. Wilson, Kraft, & Dunn, 1989; see Petty & Jarvis, 1996, for more on

high- and low-effort processes in survey responding).

### CONCLUSIONS

Although it is sometimes misunderstood, the ELM has proven to be a useful framework for studying attitude change and persuasion. Incorporation of many ELM principles in models outside the persuasion domain suggests that the ELM might prove equally beneficial in a variety of related areas. Although existing non-persuasion-related models have incorporated some aspects of the ELM, we believe that many of these models have lost some of the complexities and flexibilities (e.g., the notion of multiple roles) that might make the ELM especially useful in those domains. It is our hope that the present discussion of some misunderstood aspects of the ELM will clarify aspects of the model and encourage interpretations true to the conceptualization intended.

### NOTES

1. That is, as articulated shortly, the peripheral route to persuasion refers to attitude changes that result from low-effort central route processes (i.e., putting minimal effort into elaborating issue-relevant information) as well as peripheral processes (e.g., use of heuristics, identification with the source) since these mechanisms tend to produce similarly weak attitudes.

2. We refer to the elaboration *likelihood* continuum when assessing in advance of a message or judgment how *likely* it is that a person will think about it. For example, if there are many distractions in the situation, the likelihood of elaboration is low. The actual placement of an individual along the continuum, of course, cannot be known until after the message or attitude object has been processed.

3. Following Festinger (1954), the ELM talks about achieving subjective correctness; however, similar points can be made about achieving *confidence* in one's opinion (see Chaiken, Liberman, & Eagly, 1989), since confidence is presumably based mostly on a feeling that one's opinion is correct.

4. This effect is expected whether the cognitive responses to the arguments are added or averaged, as long as the person's initial opinion (either toward the particular object or the class of objects to which this object belongs) is added/averaged along with the new cognitive responses (see Anderson, 1981).

5. If the high-elaboration processor does not consider all of the information objectively, then the attitudinal outcomes might be the same as for the low-elaboration processor, but for different reasons. For example, if a high-elaboration processor encounters strong arguments first and becomes convinced of the merit of the position, the subsequent weak arguments might be actively reconceptualized so as to appear strong (i.e., belief in the position can lead to biased processing of the weak arguments). That is, primacy effects can occur for both effortful and noneffortful reasons (Haugtvedt & Wegener, 1994; Hawkins, Petty, & Wegener, 1996).

6. Of course, on some level, the issue of whether to lump all processes of persuasion together or to split them into two or more categories depends on the utility of the distinctions involved, as well as on how one defines what is qualitatively different from something else (Petty et al., in press). At the most general level, truly uniprocess models postulate something akin to "People think." Although true enough, such a view is relatively incapable of predicting when a given variable is likely to influence persuasion in a simple way (e.g., when mood is used as a heuristic; Petty & Cacioppo, 1983; Schwarz, 1990) as opposed to a more complex way (e.g., when mood influences interpretations of object-relevant information; Petty, Schumann, Richman, & Strathman, 1993; Wegener, Petty, & Klein, 1994).

7. Interestingly, what variables have the potential to serve as cues versus arguments can vary with situational and individual factors. For example, in a study conducted with Chinese students in Hong Kong (Aaker & Maheswaran, 1997), the mere number of arguments in a message became a less influential determinant of attitudes as task importance (i.e., elaboration likelihood) increased, whereas argument quality became more important, duplicating the data just described for U.S. college students (Petty & Cacioppo, 1984b). This cross-cultural replication suggest that Chinese students treat the mere number of arguments as a peripheral cue that is unrelated to the true merit of the advocacy when they are carefully processing a message, just as U.S. college students do. In another study, however, Chinese students were still influenced by a manipulation of the number of people who favored a product under high-elaboration conditions, whereas U.S. students were not (Maheswaran & Chaiken, 1991). The latter finding is consistent with the idea that the number of people who endorse something is viewed as more closely related to the central merits of an advocacy in a collectivist than in an individualistic culture.

8. This is not to imply that heuristics cannot add to the impact of argument processing, but rather that the same additive outcome can occur if

the variable that invokes a heuristic and/or the heuristic itself are processed for merit under high-elaboration conditions (we postpone discussion of the co-occurrence of central and peripheral processes until Postulate 6).

9. We do not mean to imply that all peripheral processes are subjected to scrutiny under high-elaboration conditions. Rather, people scrutinize both the external and internal information that is available. Thus, people might have conscious access to some peripheral information, such as retrieved heuristics (even if the retrieval process itself is automatic), but are not likely to have conscious access to other peripheral mechanisms, such as mere association (as in classical conditioning). Because of this, the output of some peripheral mechanisms can be subjected to scrutiny, whereas the output of other peripheral mechanisms cannot. Attitudinal effects of the latter mechanisms might be detected with implicit measures.

10. Different peripheral-route processes require different *minimal* motivation and ability levels to have an impact on attitudes (e.g., a self-perception process presumably requires that people have greater motivation and ability to evaluate a message than does classical conditioning or mere exposure). Thus, when one is going from extremely low levels of elaboration likelihood to moderately low levels, the impact of some peripheral processes (such as self-perception and other attributional inferences) might be increased. Once one is past the minimal point on the continuum necessary to invoke the process, however, moving higher along the continuum should reduce the impact of the process on attitudes. That is, as the elaboration likelihood is increased further, the peripheral process should account for less variance in the overall attitude.

### REFERENCES

- Aaker, J. L., & Maheswaran, D. (1997). The effect of cultural orientation on persuasion. *Journal of Consumer Research*, 24, 315-328.
- Ajzen, I. (1987). A new paradigm in the psychology of persuasion. *Contemporary Psychology*, 32, 1009-1010.
- Allen, M., & Reynolds, R. (1993). The elaboration likelihood model and the sleeper effect: An assessment of attitude change over time. *Communication Theory*, 3, 73-82.
- Anderson, N. (1981). Integration theory applied to cognitive responses and attitudes. In R. Petty, T. Ostrom, & T. Brock (Eds.), *Cognitive responses in persuasion* (pp. 361-397). Hillsdale, NJ: Erlbaum.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1-62). New York: Academic Press.
- Baker, S. M., & Petty, R. E. (1994). Majority and minority influence: Source-position imbalance as a determi-



- nant of message scrutiny. *Journal of Personality and Social Psychology*, 67, 5-19.
- Biek, M., Wood, W., & Chaiken, S. (1996). Working knowledge and cognitive processing: On the determinants of bias. *Personality and Social Psychology Bulletin*, 22, 547-556.
- Bless, H., Bohner, G., Schwarz, N., & Strack, F. (1990). Mood and persuasion: A cognitive response analysis. *Personality and Social Psychology Bulletin*, 16, 331-345.
- Bobrow, D. G., & Norman, D. A. (1975). Some principles of memory schemata. In D. G. Bobrow & A. G. Collins (Eds.), *Representation and understanding: Studies in cognitive science* (pp. 131-150). New York: Academic Press.
- Bohner, G., Rank, S., Reinhard, M., Einwiller, S., & Erb, H. (1998). Motivational determinants of systematic processing: Expectancy moderates effects of desired confidence on processing effort. *European Journal of Social Psychology*, 28, 185-206.
- Bornstein, R. F. (1989). Exposure and affect: Overview and meta-analysis of research, 1968-1987. *Psychological Bulletin*, 106, 265-289.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, 36, 129-148.
- Brehm, J. W. (1966). *A theory of psychological reactance*. New York: Academic Press.
- Brewer, M. B. (1988). A dual process model of impression formation. In T. K. Srull & R. S. Wyer (Eds.), *Advances in social cognition* (Vol. 1, pp. 177-183). Hillsdale, NJ: Erlbaum.
- Burnkrant, R. E., & Howard, D. J. (1984). Effects of the use of introductory rhetorical questions versus statements on information processing. *Journal of Personality and Social Psychology*, 47, 1218-1230.
- Burnstein, E., & Vinokur, A. (1975). What a person thinks upon learning he has chosen differently from others: Nice evidence for the persuasive arguments explanation of choice shifts. *Journal of Experimental Social Psychology*, 11, 412-426.
- Burnstein, E., Vinokur, A., & Trope, Y. (1973). Interpersonal comparison versus persuasive argumentation: A more direct test of alternative explanations for group induced shifts in individual choice. *Journal of Experimental Social Psychology*, 9, 236-245.
- Cacioppo, J. T., Marshall-Goodell, B. S., Tassinary, L. G., & Petty, R. E. (1992). Rudimentary determinants of attitudes: Classical conditioning is more effective when prior knowledge about the attitude stimulus is low than high. *Journal of Experimental Social Psychology*, 28, 207-233.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, 42, 116-131.
- Cacioppo, J. T., & Petty, R. E. (1989). Effects of message repetition on argument processing, recall, and persuasion. *Basic and Applied Social Psychology*, 10, 3-12.
- Cacioppo, J. T., Petty, R. E., Feinstein, J., & Jarvis, W. B. G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119, 197-253.
- Cacioppo, J. T., Petty, R. E., & Morris, K. J. (1983). Effects of need for cognition on message evaluation, recall, and persuasion. *Journal of Personality and Social Psychology*, 45, 805-818.
- Chaiken, S. (1980). Heuristic versus systematic information processing in the use of source versus message cues in persuasion. *Journal of Personality and Social Psychology*, 39, 752-766.
- Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social influence: The Ontario Symposium* (Vol. 5, pp. 3-39). Hillsdale, NJ: Erlbaum.
- Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 212-252). New York: Guilford Press.
- Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, 66, 460-473.
- Chaiken, S., Pomerantz, E. M., & Giner-Sorolla, R. (1995). Structural consistency and attitude strength. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 387-412). Mahwah, NJ: Erlbaum.
- Chaiken, S., Wood, W., & Eagly, A. H. (1996). Principles of persuasion. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 702-742). New York: Guilford Press.
- DeBono, K. G., & Harnish, R. J. (1988). Source expertise, source attractiveness, and the processing of persuasive information: A functional approach. *Journal of Personality and Social Psychology*, 55, 541-546.
- Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, 33, 510-540.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich.
- Evans, L. M., & Petty, R. E. (1998, May). *The effect of expectations on knowledge use*. Presented at the annual meeting of the Midwestern Psychological Association, Chicago, IL.
- Fabrigar, L. R., Priester, J. R., Petty, R. E., & Wegener, D. T. (1998). The impact of attitude accessibility on cognitive elaboration of persuasive messages. *Personality and Social Psychology Bulletin*, 24, 339-352.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). San Diego, CA: Academic Press.
- Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 247-282). Mahwah, NJ: Erlbaum.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-140.
- Fishbein, M., & Ajzen, I. (1972). Attitudes and opinions. *Annual Review of Psychology*, 23, 487-544.
- Fishbein, M., & Ajzen, I. (1981). Acceptance, yielding and impact: Cognitive processes in persuasion. In R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), *Cognitive responses in persuasion* (pp. 339-359). Hillsdale, NJ: Erlbaum.
- Fishbein, M., & Middlestadt, S. (1995). Noncognitive effects on attitude formation and change: Fact or artifact? *Journal of Consumer Psychology*, 2, 181-202.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation, from category-based to individuating processes: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 1-74). San Diego, CA: Academic Press.
- Fiske, S. T., & Pavelchak, M. A. (1986). Category-based versus piecemeal-based affective responses: Developments in schema-triggered affect. In R. M. Sorrentino, & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 1, pp. 167-203). New York: Guilford Press.
- Fleming, M. A., & Petty, R. E. (in press). Identity and persuasion: An elaboration likelihood approach. In D. Terry & M. Hogg (Eds.), *Attitudes, behavior, and social context: The role of norms and group membership*. Mahwah, NJ: Erlbaum.
- Forgas, J. P. (1992). Affect in social judgments and decisions: A multi-process model. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 227-275). San Diego, CA: Academic Press.
- Forgas, J. P. (1995). Mood and judgment: The affect-infusion model (AIM). *Psychological Bulletin*, 117, 39-66.
- Friedrich, J., Fetherstonhaugh, D., Casey, S., & Gallagher, D. (1996). Argument integration and attitude change: Suppression effects in the integration of one-sided arguments that vary in persuasiveness. *Personality and Social Psychology Bulletin*, 22, 179-191.
- Gilbert, D. T. (1991). How mental systems believe. *American Psychologist*, 46, 107-119.
- Hafer, C. L., Reynolds, K., & Obertynski, M. A. (1996). Message comprehensibility and persuasion: Effects of complex language in counterattitudinal appeals to laypeople. *Social Cognition*, 14, 317-337.
- Hamilton, M. A., Hunter, J. E., & Boster, F. J. (1993). The elaboration likelihood model as a theory of attitude formation: A mathematical analysis. *Communication Theory*, 3, 50-65.
- Harkins, S. G., & Petty, R. E. (1981). Effects of source magnification of cognitive effort on attitudes: An information processing view. *Journal of Personality and Social Psychology*, 40, 401-413.
- Harkins, S. G., & Petty, R. E. (1987). Information utility and the multiple source effect. *Journal of Personality and Social Psychology*, 52, 260-268.
- Haugtvedt, C. P. (1997). Beyond fact or artifact: An assessment of Fishbein and Middlestadt's perspectives on attitude change processes. *Journal of Consumer Psychology*, 6, 99-106.
- Haugtvedt, C. P., Schumann, D. W., Schneider, W. L., & Warren, W. L. (1994). Advertising repetition and variation strategies: Implications for understanding attitude strength. *Journal of Consumer Research*, 21, 176-189.
- Haugtvedt, C. P., & Wegener, D. T. (1994). Message order effects in persuasion: An attitude strength perspective. *Journal of Consumer Research*, 21, 205-218.
- Hawkins, C., Petty, R. E., & Wegener, D. T. (1996, May). *Need for cognition and primacy/recency: Understanding when each occurs*. Paper presented at the annual meeting of the Midwestern Psychological Association, Chicago.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.
- Heesacker, M. H., Petty, R. E., & Cacioppo, J. T. (1983). Field dependence and attitude change: Source credibility can alter persuasion by affecting message-relevant thinking. *Journal of Personality*, 51, 653-666.
- Jarvis, W. B. G., Tormala, Z., & Petty, R. E. (1998, May). *Do attitudes really change?* Paper presented at the annual meeting of the American Psychological Society, Washington, DC.
- Jaspers, J. M. G. (1978). Determinants of attitude and attitude change. In H. Tajfel & C. Fraser (Eds.), *Introducing social psychology* (pp. 277-301). Harmondsworth, England: Penguin.
- Johnson, H. H., & Watkins, T. A. (1971). The effects of message repetition on immediate and delayed attitude change. *Psychonomic Science*, 22, 101-103.
- Kelman, H. C. (1958). Compliance, identification, and internalization: Three processes of attitude change. *Journal of Conflict Resolution*, 2, 51-60.
- Kelman, H. C., & Hovland, C. I. (1953). "Reinstatement" of the communicator in delayed measurement of opinion change. *Journal of Abnormal and Social Psychology*, 48, 327-335.
- Kiesler, C. A., & Munson, P. A. (1975). Attitudes and opinions. *Annual Review of Psychology*, 26, 415-456.
- Kirman, A., & Shiv, B. (1998). Effects of source congruity on brand attitudes and beliefs: The moderating role of issue-relevant elaboration. *Journal of Consumer Psychology*, 7, 25-47.
- Krosnick, J. A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys. *Applied Cognitive Psychology*, 5, 213-236.
- Kruglanski, A. W. (1989). *Lay epistemics and human knowledge*. New York: Plenum Press.
- Kruglanski, A. W. (1990). Lay epistemic theory in social-cognitive psychology. *Psychological Inquiry*, 1, 181-197.
- Kruglanski, A. W., & Thompson, E. P. (in press). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry*.
- Leippe, M. R., & Elkin, R. A. (1987). When motives clash: Issue involvement and response involvement as determinants of persuasion. *Journal of Personality and Social Psychology*, 52, 269-278.
- Leventhal, H. (1970). Findings and theory in the study of fear communications. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 5, pp. 119-186). New York: Academic Press.
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, 37, 2098-2109.
- Mackie, D. M., & Worth, L. T. (1989). Processing deficits and the mediation of positive affect in persuasion. *Journal of Personality and Social Psychology*, 57, 27-40.
- Maheswaran, D., & Chaiken, S. (1991). Promoting systematic processing in low-motivation settings: Effect of incongruent information on processing and judgment. *Journal of Personality and Social Psychology*, 61, 13-33.
- Maio, G. R., Bell, D. W., & Esses, V. M. (1996). Ambivalence and persuasion: The processing of messages

- about immigrant groups. *Journal of Experimental Social Psychology*, 32, 513-536.
- McClelland, J. L., McNaughton, B. L., & O'Reilly, R. C. (1995). Why are there complementary learning systems in the hippocampus and neocortex? Insights from the successes and failures of connectionist models of learning and memory. *Psychological Review*, 102, 419-457.
- McGarty, C., Haslam, S. A., Hutchinson, K. J., & Turner, J. C. (1994). The effects of salient group memberships on persuasion. *Small Group Research*, 25, 267-293.
- McGuire, W. J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 1, pp. 191-229). New York: Academic Press.
- Miniard, P. W., Bhatla, S., Lord, K. R., Dickson, P. R., & Unnava, H. R. (1991). Picture-based persuasion processes and the moderating role of involvement. *Journal of Consumer Research*, 18, 92-107.
- Moore, D. L., & Reardon, R. (1987). Source magnification: The role of multiple sources in the processing of advertising appeals. *Journal of Marketing Research*, 24, 412-417.
- O'Keefe, D. J. (1990). *Persuasion: Theory and research*. Newbury Park, CA: Sage.
- Ottati, V. C., & Isbell, L. M. (1996). Effects on mood during exposure to target information on subsequently reported judgments: An on-line model of misattribution and correction. *Journal of Personality and Social Psychology*, 71, 39-53.
- Ottati, V., Terkildsen, N., & Hubbard, C. (1997). Happy faces elicit heuristic processing in a televised impression formation task: A cognitive tuning account. *Personality and Social Psychology Bulletin*, 23, 1144-1156.
- Perloff, R. M., & Brock, T. C. (1980). And thinking makes it so: Cognitive responses to persuasion. In M. Rolf & G. Miller (Eds.), *Persuasion: New directions in theory and research* (pp. 67-100). Beverly Hills, CA: Sage.
- Petty, R. E. (1977). *A cognitive response analysis of the temporal persistence of attitude changes induced by persuasive communications*. Unpublished doctoral dissertation, Ohio State University.
- Petty, R. E. (1994). Two routes to persuasion: State of the art. In G. d'Ydewalle, P. Eelen, & P. Bertelson (Eds.), *International perspectives on psychological science* (Vol. 2, pp. 229-247). Hillsdale, NJ: Erlbaum.
- Petty, R. E. (1997). The evolution of theory and research in social psychology: From single to multiple effect and process models of persuasion. In C. McGarty & S. A. Haslam (Eds.), *The message of social psychology: Perspectives on mind in society* (pp. 268-290). Oxford: Blackwell.
- Petty, R. E., Baker, S., & Gleicher, F. (1991). Attitudes and drug abuse prevention: Implications of the elaboration likelihood model of persuasion. In L. Donohew, H. E. Sypher, & W. J. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 71-90). Hillsdale, NJ: Erlbaum.
- Petty, R. E., & Cacioppo, J. T. (1979a). Effects of forewarning of persuasive intent and involvement on cognitive responses and persuasion. *Personality and Social Psychology Bulletin*, 5, 173-176.
- Petty, R. E., & Cacioppo, J. T. (1979b). Issue-involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology*, 37, 1915-1926.
- Petty, R. E., & Cacioppo, J. T. (1981). *Attitudes and persuasion: Classic and contemporary approaches*. Dubuque, IA: William C. Brown.
- Petty, R. E., & Cacioppo, J. T. (1983). The role of bodily responses in attitude measurement and change. In J. T. Cacioppo & R. E. Petty (Eds.), *Social psychophysiology: A sourcebook* (pp. 51-101). New York: Guilford Press.
- Petty, R. E., & Cacioppo, J. T. (1984a). The effects of involvement on response to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology*, 46, 69-81.
- Petty, R. E., & Cacioppo, J. T. (1984b). Source factors and the elaboration likelihood model of persuasion. *Advances in Consumer Research*, 11, 668-672.
- Petty, R. E., & Cacioppo, J. T. (1986a). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Petty, R. E., & Cacioppo, J. T. (1986b). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123-205). New York: Academic Press.
- Petty, R. E., & Cacioppo, J. T. (1990). Involvement and persuasion: Tradition versus integration. *Psychological Bulletin*, 107, 367-374.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology*, 41, 847-855.
- Petty, R. E., Cacioppo, J. T., & Haugtvedt, C. (1992). Involvement and persuasion: An appreciative look at the Sherifs' contribution to the study of self-relevance and attitude change. In D. Granberg & G. Sarup (Eds.), *Social judgment and intergroup relations: Essays in honor of Muzafer Sherif* (pp. 147-175). New York: Springer-Verlag.
- Petty, R. E., Cacioppo, J. T., & Heesacker, M. (1981). Effects of rhetorical questions on persuasion: A cognitive response analysis. *Journal of Personality and Social Psychology*, 40, 432-440.
- Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10, 135-146.
- Petty, R. E., Gleicher, F. H., & Jarvis, B. (1993). Persuasion theory and AIDS prevention. In J. B. Pryor & G. Reeder (Eds.), *The social psychology of HIV infection* (pp. 155-182). Hillsdale, NJ: Erlbaum.
- Petty, R. E., Harkins, S. G., & Williams, K. D. (1980). The effects of group diffusion of cognitive effort on attitudes: An information processing view. *Journal of Personality and Social Psychology*, 38, 81-92.
- Petty, R. E., Haugtvedt, C., & Smith, S. M. (1995). Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93-130). Mahwah, NJ: Erlbaum.
- Petty, R. E., & Jarvis, W. B. G. (1996). An individual differences perspective on assessing cognitive processes. In N. Schwarz & S. Sudman (Eds.), *Answering questions: Methodology for determining cognitive and communicative processes in survey research* (pp. 221-257). San Francisco: Jossey-Bass.
- Petty, R. E., & Jarvis, W. B. G. (1998). *What happens to the "old" attitude when attitudes change?* Presented at the annual meeting of the Society of Experimental Social Psychology, Lexington, KY.
- Petty, R. E., Jarvis, W. B. G., & Evans, L. M. (1996). Recurrent thought: Implications for attitudes and persuasion. In R. S. Wyer (Ed.), *Advances in social cognition* (Vol. 9, pp. 145-164). Mahwah, NJ: Erlbaum.
- Petty, R. E., Kasser, J. A., Haugtvedt, C. P., & Cacioppo, J. T. (1987). Source and message factors in persuasion: A reply to Stiff's critique of the elaboration likelihood model. *Communication Monographs*, 54, 233-249.
- Petty, R. E., Ostrom, T. M., & Brock, T. C. (Eds.). (1981). *Cognitive responses in persuasion*. Hillsdale, NJ: Erlbaum.
- Petty, R. E., Priester, J. R., & Wegener, D. T. (1994). Cognitive processes in attitude change. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (2nd ed., Vol. 2, pp. 69-142). Hillsdale, NJ: Erlbaum.
- Petty, R. E., Schumann, D. W., Richman, S. A., & Strathman, A. J. (1993). Positive mood and persuasion: Different roles for affect under high- and low-elaboration conditions. *Journal of Personality and Social Psychology*, 64, 5-20.
- Petty, R. E., & Wegener, D. T. (1993). Flexible correction processes in social judgment: Correcting for context induced contrast. *Journal of Experimental Social Psychology*, 29, 137-165.
- Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., pp. 323-390). New York: McGraw-Hill.
- Petty, R. E., Wegener, D. T., Fabrigar, L. R., Priester, J. R., & Cacioppo, J. T. (1993). Conceptual and methodological issues in the elaboration likelihood model of persuasion: A reply to the Michigan State critics. *Communication Theory*, 3, 336-363.
- Petty, R. E., Wegener, D. T., & White, P. (1998). Flexible correction processes in persuasion. *Social Cognition*, 16, 93-113.
- Petty, R. E., Wells, G. L., & Brock, T. C. (1976). Distraction can enhance or reduce yielding to propaganda: Thought disruption versus effort justification. *Journal of Personality and Social Psychology*, 34, 874-884.
- Petty, R. E., Wells, G. L., Heesacker, M., Brock, T. C., & Cacioppo, J. T. (1983). The effects of recipient posture on persuasion: A cognitive response analysis. *Personality and Social Psychology Bulletin*, 9, 209-222.
- Petty, R. E., Wheeler, C. S., & Bizer, G. Y. (in press). Is there one persuasion process or more? Lumping versus splitting in attitude change theories. *Psychological Inquiry*.
- Pittman, T. S. (1993). Control motivation and attitude change. In G. Weary, F. Gleicher, & K. Marsh (Eds.), *Control motivation and social cognition* (pp. 157-175). New York: Springer-Verlag.
- Pratkanis, A. R. (1989). Advances in social psychology during the postcrisis era. *Contemporary Psychology*, 34, 547-548.
- Priester, J. R., & Fleming, M. A. (1997). Artifact or meaningful theoretical constructs? Examining evidence for nonbelief- and belief-based attitude change processes. *Journal of Consumer Psychology*, 6, 67-76.
- Priester, J. R., & Petty, R. E. (1995). Source attributions and persuasion: Perceived honesty as a determinant of message scrutiny. *Personality and Social Psychology Bulletin*, 21, 637-654.
- Puckett, J. M., Petty, R. E., Cacioppo, J. T., & Fisher, D. L. (1983). The relative impact of age and attractiveness stereotypes on persuasion. *Journal of Gerontology*, 38, 340-343.
- Ratneswar, S., & Chaiken, S. (1991). Comprehension's role in persuasion: The case of its moderating effect on the persuasive impact of source cues. *Journal of Consumer Psychology*, 18, 52-62.
- Sanbonmatsu, D. M., & Kardes, F. R. (1988). The effects of physiological arousal on information processing and persuasion. *Journal of Consumer Research*, 15, 379-385.
- Schul, Y., & Burnstein, E. (1985). When discounting fails: Conditions under which individuals use discredited information in making a judgment. *Journal of Personality and Social Psychology*, 49, 894-903.
- Schumann, D., Petty, R. E., & Clemons, S. (1990). Predicting the effectiveness of different strategies of advertising variation: A test of the repetition-variation hypotheses. *Journal of Consumer Research*, 17, 192-202.
- Schwarz, N. (1990). Feelings as information: Informational and motivational functions of affective states. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 527-561). New York: Guilford Press.
- Schwarz, N. (1997). Moods and attitude judgments: A comment on Fishbein and Middlestadt. *Journal of Consumer Psychology*, 6, 93-98.
- Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513-523.
- Sears, D. O. (1988). [Review of *Communication and persuasion: Central and peripheral routes to attitude change*]. *Public Opinion Quarterly*, 52, 262-265.
- Sengupta, J., Goodstein, R. C., & Boninger, D. S. (1997). All cues are not created equal: Obtaining attitude persistence under low-involvement conditions. *Journal of Consumer Research*, 23, 351-361.
- Sherif, M. (1977). Crisis in social psychology: Some remarks towards breaking through the crisis. *Personality and Social Psychology Bulletin*, 3, 368-383.
- Smith, S. M., & Petty, R. E. (1996). Message framing and persuasion: A message processing analysis. *Personality and Social Psychology Bulletin*, 22, 257-268.
- Smith, S. M., & Shaffer, D. R. (1991). Celerity and cajolery: Rapid speech may promote or inhibit persuasion through its impact on message elaboration. *Personality and Social Psychology Bulletin*, 17, 663-669.
- Snyder, M. (1979). Self-monitoring processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 12, pp. 86-128). New York: Academic Press.
- Soldat, A. S., Sinclair, R. C., & Mark, M. M. (1997). Color as an environmental processing cue: External affective cues can directly affect processing strategy without affecting mood. *Social Cognition*, 15, 55-71.
- Sorrentino, R. M., Bobocel, D. R., Gitta, M. Z., & Olson, J. M. (1988). Uncertainty orientation and persuasion: Individual differences in the effects of personal relevance on social judgments. *Journal of Personality and Social Psychology*, 55, 357-371.
- Spiegel, S., Thompson, E. P., & Kruglanski, A. (1996, July). *Toward a unimodal theory of persuasion: On the effortful processing of "heuristic" information*. Pa-

- per presented at the annual meeting of the American Psychological Society, Washington, DC.
- Staats, A. W., & Staats, C. K. (1958). Attitudes established by classical conditioning. *Journal of Abnormal and Social Psychology*, 57, 37-40.
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 261-302). New York: Academic Press.
- Sternthal, B., Dholakia, R., & Leavitt, C. (1978). The persuasive effect of source credibility: A test of cognitive response analysis. *Journal of Consumer Research*, 4, 252-260.
- Strack, F. (1992). The different routes to social judgments: Experiential versus informational based strategies. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgments* (pp. 249-275). Hillsdale, NJ: Erlbaum.
- Stiff, J. B. (1986). Cognitive processing of persuasive message cues: A meta-analytic review of the effects of supporting information on attitudes. *Communication Monographs*, 53, 75-89.
- Taylor, S. E. (1981). The interface of cognitive and social psychology. In J. H. Harvey (Ed.), *Cognition, social behavior, and the environment* (pp. 189-211). Hillsdale, NJ: Erlbaum.
- Tedeschi, J. T., Schlenker, B. R., & Bonoma, T. V. (1971). Cognitive dissonance: Private ratiocination or public spectacle? *American Psychologist*, 26, 685-695.
- Weber, S. J. (1972). *Opinion change is a function of the associative learning of content and source factors*. Unpublished doctoral dissertation, Northwestern University.
- Wegener, D. T., & Claypool, H. M. (in press). The elaboration continuum by any other name does not smell as sweet. *Psychological inquiry*.
- Wegener, D. T., Downing, J., Krosnick, J. A., & Petty, R. E. (1995). Measures and manipulations of strength related properties of attitudes: Current practice and future directions. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 455-488). Mahwah, NJ: Erlbaum.
- Wegener, D. T., & Petty, R. E. (1994). Mood management across affective states: The hedonic contingency hypothesis. *Journal of Personality and Social Psychology*, 66, 1034-1048.
- Wegener, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgment: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, 68, 36-51.
- Wegener, D. T., & Petty, R. E. (1997). The flexible correction model: The role of naive theories of bias in bias correction. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 141-208). San Diego, CA: Academic Press.
- Wegener, D. T., Petty, R. E., & Klein, D. J. (1994). Effects of mood on high elaboration attitude change: The mediating role of likelihood judgments. *European Journal of Social Psychology*, 24, 25-43.
- Wegener, D. T., Petty, R. E., & Smith, S. M. (1995). Positive mood can increase or decrease message scrutiny: The hedonic contingency view of mood and message processing. *Journal of Personality and Social Psychology*, 69, 5-15.
- Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted influences on judgments and evaluations. *Psychological Bulletin*, 116, 117-142.
- Wilson, T. D., Kraft, D., & Dunn, D. S. (1989). The disruptive effects of explaining attitudes: The moderating effect of knowledge about the attitude object. *Journal of Experimental Social Psychology*, 25, 379-400.
- Wilson, T. D., & Schooler, T. (1998). *Dual attitudes*. Unpublished manuscript, University of Virginia.
- Wood, W., Kallgren, C. A., & Preisler, R. M. (1985). Access to attitude-relevant information in memory as a determinant of persuasion: The role of message attributes. *Journal of Experimental Social Psychology*, 21, 73-85.
- Wood, W., Rhodes, N., & Biek, M. (1995). Working knowledge and attitude strength: An information processing analysis. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 283-313). Mahwah, NJ: Erlbaum.
- Worth, L. T., & Mackie, D. M. (1987). Cognitive mediation of positive affect in persuasion. *Social Cognition*, 5, 76-94.
- Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology Monograph Supplements*, 9, 1-27.
- Zanna, M. P., Fazio, R. H., & Ross, M. (1994). The persistence of persuasion. In R. C. Schank & E. Langer (Eds.), *Beliefs, reasoning, and decision-making: Psychologic in honor of Bob Abelson* (pp. 347-362). Hillsdale, NJ: Erlbaum.
- Zanna, M. P., Kiesler, C. A., & Pilkonis, P. A. (1970). Positive and negative attitudinal affect established by classical conditioning. *Journal of Personality and Social Psychology*, 14, 321-328.